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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
John Norris Thinks Ahead
You're Breathing Hard, Man
Carrier Humanizes

Stories of the Week

"I have unearthed," an archaeologist wrote a museum curator, "an incredibly well preserved piece of early Roman carpentry."

"What are its dimensions?" the curator wanted to know.

By return mail came this reply: "II-by-IV."

Austie Barrows of Fusite describes a feminine member of the "horsey set" in Cincinnati thusly:

"If it were legal, she'd marry a horse."

"Josie! Jamie!" exclaimed their mother. "Haven't you and your brother heard of the Golden Rule?"

"Yes," sputtered her little girl, "but he did it unto me first."

John Norris Thinks Ahead

House trade-ins, accomplished as easily as swapping your old auto for a new model, are predicted by an eminent spokesman for the residential heating and air conditioning business. Of the friendship of this gentleman "Dope" is proud, because his keen mind is making genuine contributions to our industry.

Homeowners frequently have trouble disposing of their old homes when they decide to move to another city, or buy a better quality house. And, except for isolated instances, little has been done to solve this problem, John W. Norris, president of Lennox Industries, Inc. (Marshalltown, Iowa), tells us.

He cites as an example a Los Angeles homeowner transferred to the New York area. "At the present time," Norris avers, "I know of no way this homeowner could trade-in his California house on one he will buy eventually in New York."

Norris adds that the National Association of Real Estate Boards and the National Association of Home Builders strongly favor development of a practical house trade-in system.

"In addition," states this industry statesman, "some mortgage bankers in scattered areas are beginning to study this situation, feeling that the trade-in idea is good and should be developed."

(Concluded on Page 12, Col. 1)

ASHAE, ASRE Ballots Mailed; ASRE Meeting Program Set

• • •

Merger Voting Procedures Outlined for Both Groups

NEW YORK CITY—Members of the American Society of Refrigerating Engineers have received their proxy ballots, by which they will vote on the proposed merger of ASRE and the American Society of Heating & Air-Conditioning Engineers, in the event they do not cast their vote in person at the opening session of the semi-annual meeting, Dec. 1, in New Orleans.

A majority of two-thirds of **those members voting** is required in the vote of each society in order for the merger to win approval.

On the ASRE proxy ballot the member will vote for or against the resolutions proposing the merger. He must sign his name and date the ballot. The proxy will be voted in accordance with the individual member's instruction, but if no instructions are given, it will be voted in favor of the merger.

Leon Buehler, Jr., Walter Cooke, and John E. Dube have been designated to receive and count the proxy votes at the New Orleans meeting.

The ASHAE also sent out its proxy ballots, which are similar to the ASRE proxy ballots with one exception. ASHAE instructs its members to sign the ballot only if they want their votes recorded. Otherwise, unsigned ballots will be counted but not recorded. The envelope containing the ballot must be signed, which is also a requirement on the ASRE proxy.

The ASHAE voting will be conducted at a special meeting of the society to be held at 10 a.m. Dec. 1 in the Conrad Hilton hotel in Chicago. Since there is no other business scheduled for the meeting, it is presumed that practically all the voting will be by proxy ballot.

In his "President's Page" message in the November issue of *Refrigerating Engineering*, Cecil Boling, president, Dunham-Bush, Inc., and president of ASRE, presented a final discussion on the merger, saying in part:

(Concluded on Page 29, Col. 1)

• • •

Thermoelectric Effect To Be ASRE Topic

NEW YORK CITY—"Scarcely more than the proverbial gleam-in-the-eye of design-engineers a few months ago, and treated wholly from the theoretical aspect at the preceding meeting of the American Society of Refrigerating Engineers, thermoelectric refrigeration is now just that much closer to practical accomplishment."

So stated the ASRE in announcing that at the society's 45th semiannual meeting in New Orleans, "it will be accorded both discussion and display as a workable thing, though not yet to be labeled literally commercial."

The meeting will be held Dec. 1-3 at the Roosevelt hotel.

At the second technical ses-

(Concluded on Page 29, Col. 3)

Heating, Cooling Show Promises Many Innovations

NEW YORK CITY—New exhibitors are adding further attractions to the 14th International Heating & Air Conditioning Exposition, to be held in Convention Hall, Philadelphia, Jan. 26-29.

Outranking the last eastern air conditioning exposition, four years ago, the event will present a wealth of innovations in the allied arts that are engaged in tempering indoor climate, according to exposition officials.

The exposition will be under the auspices of the American Society of Heating & Air-Conditioning Engineers in conjunction with the 65th annual meeting of the society.

A substantial group of exhibits will be devoted to air purification.

In one display, a new detergent-adhesive system will be shown that is termed an

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York Shows '59 Line To Distributors

Announces 'Blue Chip Franchise' Plan

YORK, Pa. — A residential heat pump and a home "Comfort Center" which will provide both heating and cooling were among new 1959 products unveiled by York Corp. at the first of five regional distributor conventions.

Held here at the Yorktowne hotel Nov. 3-5, the meeting was attended by more than 150 distributors from five southeastern states.

Henry M. Haase, president of York, told the distributors that the company has a "Blue Chip Franchise" plan for 1959 which was designed to help bring more stability to an industry troubled by price-cutting, exaggerated performance claims, short-time seasonal sales efforts, and low profits.

"Our Blue Chip Franchise," he said, "is based on the conviction that the consumer wants to know that he is getting a quality product for his money."

Haase said York is going to "tell the public our story of of built-in quality made possible through advanced engineering and research, and then sell only through distributors and dealers pledged to observe sound pricing and merchandising practices." In a re-evaluation of its dealers, York will give the "Blue Chip Franchise" to those who qualify.

Other speakers included Russ

(Continued on Page 8, Col. 1)

G-E To Bow New 'Thinline' Models

LOUISVILLE, Ky. — New models of "Thinline" room air conditioners "designed to meet a variety of cooling needs for a wide range of budgets" will be introduced by General Electric Co. for the 1959 season.

The company will also offer 1959 refrigerator-freezers with three swing-out shelves.

A new "Super Thinline" air conditioner in two models—1½ and 2 hp.—is designed for extra-large-capacity cooling in areas such as the South and Southwest where high temperatures are the rule throughout much of the summer. These models have cooling capacities of 13,000 and 16,000 B.t.u., respectively, the company said.

Modern styling that harmonizes with any interior, plus extra convenience-comfort features, are said to feature the 1959 "Custom Thinline."

With the 6-position performance selector incorporating a 3-speed fan, a single control selects the desired amount of cooling, moisture removal, and air circulation, it was pointed out. Quiet performance for night-time use is provided by an extra low fan speed, according to G-E. This is a 115-V.

(Concluded on Page 4, Col. 2)

THERMOELECTRIC . . . . Next Week

Do you understand thermoelectric refrigeration?

Are you confused by unfamiliar terminology and mathematical equations?

Is practical thermoelectric cooling right around the corner or years away?

An authoritative presentation of this much-discussed new field will appear next week.

Edited by NEWS technical editor Frank J. Versagi, this significant group of articles will present—in easily understood terms—the basic theory and actual status of thermoelectric refrigeration.

NHAW To Meet Dec. 1 to 3 In Cleveland

COLUMBUS, Ohio — Two workshop panel sessions — one on policy problems of wholesalers and the other on costs of services — are among features programmed for the 12th annual international convention of the National Heating & Air-conditioning Wholesalers, Inc.

The convention will be held Dec. 1-3 at the Statler hotel in Cleveland.

Theme of the meeting is "A shakedown cruise in '59 for smoother sailing in '60. Policy, profit, promotion, product, price, people."

Registration will start on Sunday, Nov. 30. There will also be a board of trustees luncheon and meeting that day and a social hour and reception in the evening.

Following committee meetings Monday morning, the convention keynote address will be

(Concluded on Back Page, Col. 1)

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Latch Law Applies To All Refrigerators In Interstate Commerce

WASHINGTON, D. C. — A Federal law requiring that all refrigerators sold in interstate commerce be equipped with devices so that they can be opened from the inside with slight pressure went into effect on Oct. 30.

The measure was passed by Congress in 1956. Manufacturers were given until Oct. 30, 1958 to comply. Under the law, refrigerator doors must be made to open when: Not more than 15 lbs. pressure is applied from the inside where the handle is located,

Or, an inside knob requiring not more than 5 lbs. pressure if turned,

Or, some automatic device requiring not more than 15 lbs. pressure operates.

10 Ohio Firms To Be Arraigned Dec. 5 On Price Fixing Conspiracy Charges

TOLEDO — Arraignment has been set for Dec. 5 in the case of 10 area firms accused of conspiring illegally to fix prices of General Electric major appliances and prevent other dealers from acquiring the appliances for resale.

The firms recently entered pleas of innocent in U. S. District Court here.

Federal Judge Frank L. Kloeb pointed out that at the time of the arraignment, the defendants would either have to change their pleas or accept a trial date.

Defendants are Commercial Electric Co., wholesale distributor of General Electric major appliances; S & K Appliances, Inc.; Gross Electric Fixture Co.; Woodville Appliances, Inc.; Lusk Furniture & Appliances, Inc.; Shea's, Inc.; Phillips Appliance & Air Conditioning; Superior Refrigeration Sales & Service; Frank Rogers Furniture City, Inc. of suburban Maumee; and LaSalle & Koch, division of the Mack Co.

Columbia Law School Building To Be Cooled

NEW YORK CITY—Ground was broken recently for a $7,000,000, eight-story, air conditioned building for the Columbia university School of Law. The structure will be the first building in the university's $17,000,000 East Campus, according to the announcement.

T. M. Hartley Will Manage Sales for Ucon Refrigerants

NEW YORK CITY—Thomas M. Hartley has been appointed sales manager-"Ucon" refrigerants by Union Carbide Chemicals Co., Div. of Union Carbide Corp.

T. M. Hartley

Hartley will make his headquarters in New York City. The announcement was made here by John R. Hulten, manager-fluorocarbon sales.

The appointment is another step in the company's organization for marketing Ucon fluorocarbons, Hulten said. A substantial portion of the production of these chemicals will be sold to the refrigeration and air conditioning fields.

Ucon fluorocarbons will be produced at Institute, W. Va., in a new unit designed to turn out 50 million pounds per year. It is slated to go on stream this fall.

Hartley has been a member of the Union Carbide organization for the past six and a half years. He moves to his new position from the corporation's Linde Co. where he was assistant to the sales manager, Gas Apparatus Dept.

Coleman Revamps Sales Organization, Names J. L. Moore, Jr.

WICHITA, Kan. — The Coleman Co., Inc. has divided its sales organization into three marketing divisions according to product classifications and type of distribution.

The three divisions and their respective general managers are Home Heating and Air Conditioning, Jess L. Moore, Jr.; Outing Products, A. O. Beyer; and Mobile Home Heating and Air Conditioning, R. H. Lowe.

Moore is a member of the Coleman board of directors. Prior to his new assignment he was director of marketing services.

Associated with Moore in the operation of the new marketing divisions are A. M. (Tony) Castello, merchandise manager; R. G. Rankin, sales manager; Walter L. Lewis, administrative manager; L. Brady Myers, advertising and sales promotion manager; and Edward G. Johnson, service manager.

In announcing the restructuring of the sales organization, Sheldon Coleman, president, said the moves were part of a plan which recognizes changing market conditions and shifting patterns of distribution.

"By completely divisionalizing our operations we are now in a position to give our customers better service and support," he said.

RACCASC Opposing Plan-Signing Clause In L. A. Code Proposal

LOS ANGELES—The proposal that registered mechanical engineers must sign all comfort heating and comfort cooling plans and specifications for all but smaller jobs is being opposed by the Refrigeration & Air Conditioning Contractors Association of Southern California.

Henry B. Ely, executive secretary, has asked members to write city councilmen, opposing passage of the engineer requirements.

The proposed heating, ventilating, and air conditioning code comes before the Los Angeles city council and its committees during the latter part of November. The association will oppose the engineer plan before the city council, Ely said.

The position of RACCASA is that the requirement will mean a delay in getting a building permit, increase the cost of city government, and interfere with the work of the contractor.

Quietest Direct Drive Blower Motor

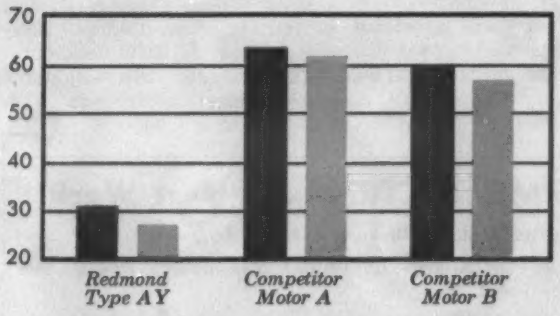
Place a mechanic's stethoscope on the end cap and you can easily hear the difference between the newly-designed Redmond Type AY and motors of conventional design. Try it on a Redmond 1/6 hp—the noise level is about that of a 1/35 hp motor of conventional design.

New Redmond Design Reduces Blower Vibration to One-Fifth that of units using Conventional Shaded-Pole Motors

Apply vibration tests and you will be quick to agree that here is the quietest direct-drive blower motor available. The AY Tri-Flux motor is designed and manufactured in every way to give years of trouble-free service and whisper-quiet operation. The positive oil system provides force-feed lubrication. Recirculating the oil assures maximum bearing life.

The graph shows vibration test results on the new Redmond design and two competitive motors. These tests were made with the best vibration testing equipment available. The solid black bar shows vibration on the motor end cap; the gray bar shows vibration on the blower housing. The graph is decibel readings on 120 cycles, since the 120 cycle frequency is the one that is the basic source of nearly all noise problems. Reduction of vibration is a logarithmic function—the reduction of vibration in the Redmond motor to 33 decibels reduces noise to only 1/5th that of conventional motors.

The new AY is ideal for a wide variety of applications requiring a whisper-quiet, economical, high-quality motor. Contact us at Owosso, Michigan, and we will have the Redmond sales engineer in your district call you at once.



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Hussmann Resumes New Plant Construction

ST. LOUIS—W. B. McMillan, president of Hussmann Refrigerator Co., announced that construction of the company's new refrigerator plant near Haddonfield, N. J., recently has been resumed.

Plans call for completion of this new manufacturing facility late in the second quarter of 1959. The plant is located on a 65-acre plant site fronting on the New Jersey Turnpike and served by the Pennsylvania-Reading Seashore Lines.

Construction on the first unit started in the fall of 1956, but construction was suspended in June, 1957, due to indications of the coming recession and the advisability of revising facilities to incorporate improved methods of manufacture, it was pointed out.

G-E Announces Lines for '59--

(Concluded from Page 1, Col. 4)

model with 8,500 B.t.u. cooling capacity.

"Top performance plus economy" are features of the new "Deluxe Thinline." Two 1-hp. models—115 and 230 volts—will be offered. The 115-V. model operates on adequate standard house current and features an unusually low noise level, G-E said. "This unit has a B.t.u. rating in the 6,500 range while the 230-V. model is rated at 9,000," it was stated.

The 1959 "All-Weather Thinline" is a reverse cycle model.

"Designed for installation in such areas as sun porches and added-on rooms, it makes them usable all year around by assuring 12-month comfort," the announcement said. "Economical heat pump operation plus reliable resistance heating provides constant 10,000 B.t.u. heating at lowest outdoor temperatures."

1959 "Custom Thinline" Air Conditioner by General Electric.

Also in the line is the "Thinette," an install-it-yourself model "that enables the homeowner to enjoy cool comfort within hours after he picks it up and brings it home in his car."

Said to provide a full 6,000 B.t.u. cooling, the Thinette has a tilt-top director for flexible air distribution. An automatic temperature control and a 2-speed fan control are other features.

SWING-OUT shelves, which bring all the food out in front where it can be seen, are a top feature of General Electric's 1959 "Straight-Line" refrigerator-freezers. These shelves are adjustable up or down by pressing a button and lifting or lowering the shelves.

Also in the line is a "Built-In Thinline" unit with a front panel which can be papered or painted to match room decor. Aluminum case can be installed in the wall during new home construction and working unit inserted later. Case dimensions are 15⅝ in. high and 26 in. wide; two case depths are available—12 and 16⅞ in.—which includes a 3½-in. projection into the room.

New "Straight-Line" refrigerator-freezers with swing-out shelves include model BH-15S with 5-cu. ft. roll-out freezer, BH-13S with 3.5-cu. ft. roll-out freezer, and BH-12S with separate freezing compartment at top.

The swing-out shelves bring all the food out front in full view, G-E pointed out. They are adjustable up or down by pressing a button and lifting or lowering the shelf. The shelves are also removable by pressing a button and lifting out and are said to be exceptionally sturdy.

In the automatically defrosted refrigerator section, two vegetable bins also swing-out. Each bin is removable.

In the door, the egg tray swings-out. Storing up to 18 eggs, it lifts out for carrying to the work counter.

The butter compartment also swings-out, and is removable. The new switch-control settings for soft, medium, or very firm butter are simpler, easier to adjust, G-E said.

Four storage shelves are provided in the door; three are adjustable and one is deep enough to hold big beverage bottles.

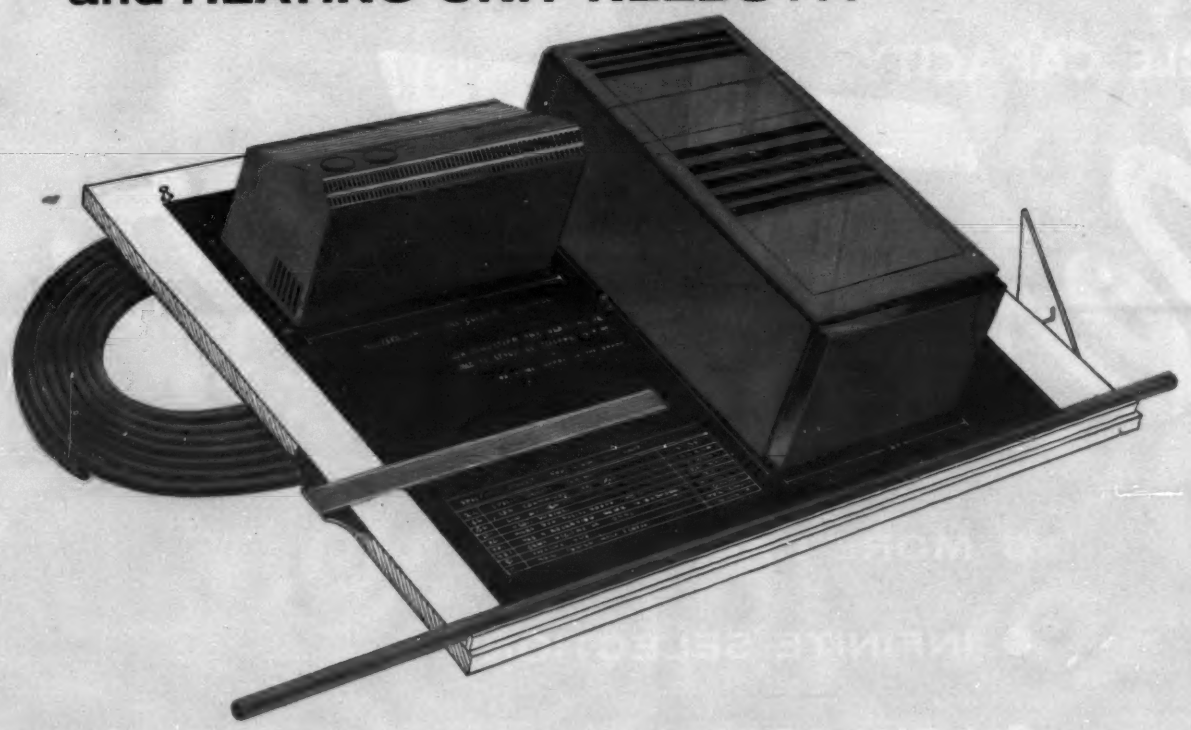
The roll-out freezer "glides out at a touch." Two compartments are said to make it easier to store and organize frozen foods.

A new juice-can dispenser stores 10 cans. Other features: Ice-cube-ejector trays and storage bin to hold extra cubes.

G-E "Mix-or-Match" colors are available in all swing-out shelf models, and the light blue interior will be enhanced with dark blue accents.

The refrigerator-freezers will be on the market in January, according to the announcement.

For your
REFRIGERATION, AIR CONDITIONING
and HEATING UNIT NEEDS . . .



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Looking for a Business to Buy . . . ?

Check the Business Opportunities Section in the classified advertising columns.

20,000-HOUR OPERATION FROM ONE LUBRICATION

Unique lubrication system of both Shaded-Pole and Permanent-Capacitor motors assures longer, trouble-free operation

The best appliance made is no more efficient than its motor. And the motor is no better than its lubrication system.

Delco's new, shorter fan motors use a highly advanced oil impregnated fibrous material which results in a more desirable feeding rate of oil to the bearing, more than adequate supply of oil in the reservoir, and excellent oil retention in the oil well. Life tests show that this lubrication system in the newly designed SS and PC direct drive fan motors is suitable for more than 20,000 hours of operation without relubrication (equivalent to 5 years of use). The rest of the motor is designed to match the lubrication system in durability. This is the type of motor dependability you should expect in your product.

Both the SS and PC motors are available with one or both end frames enclosed and either enclosed or ventilated main frames for maximum flexibility in product design. The 5½" line of motors is available in SS ratings of 1/15 through 1/4 HP, and PC ratings of 1/15 through 1/3 HP. Both are available in a wide choice of mountings.

Contact your Delco Products sales office for complete details. Find out what advantages this new motor has to offer your product.

FLEXIBLE ELECTRICAL CONNECTION—Attachment of leads from your wiring harness is fast and easy. They go directly to a built-in terminal block. Also available with various lead lengths attached to terminal block or connected direct to winding.

ADAPTABLE MOUNTING RING—The removal of the mounting ring provides a completely flat end frame for thru-bolt or belly-band mounting. Mounting rings, bases, and base clamps are available.

RUST RESISTANT THROUGHOUT—All metal parts are specially treated to resist rust and corrosion.

MOISTURE RESISTANT INSULATION—Insulation components offer maximum protection against moisture in high-humidity air-conditioning applications.

GM GENERAL MOTORS DELCO

DELCO MOTORS

Delco Products, Division of General Motors, Dayton, Ohio

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- INDUSTRIAL MOTORS
- GENERATORS
- ACTUATORS
- AUTOMOTIVE AND HYDRAULIC EQUIPMENT
- HERMETIC MOTORS AND CONTROLS
- RESIDENTIAL GARAGE DOOR OPERATORS
- AIR SUSPENSION COMPONENTS

Cooling Can Be Added

Residence Halls of 8 California Universities To Get Individual Room Heating, Ventilating

LOS ANGELES — New residence halls of eight university and college campuses around California, in the months ahead, are to be set with individual-room concealed type heating and ventilating equipment manufactured by Drayer-Hanson.

In many cases, the units will eventually be on-job converted to handle the cooling cycle for year-round air conditioned comfort, it was indicated.

Blanket orders processing through the West Coast factory call for a total of some 3,541 separate units, according to Wm. Keichline, the firm's assistant sales manager. His department finalized negotiations for the air conditioning manufacturer in conjunction with two company local-area sales agent groups, Air Conditioning Supply Co. here and E. C. Cooley Co., San Francisco.

Keichline pointed out that the business evolving from the State of California is one of the largest orders in total units ever secured by the manufacturer.

Campuses involved are San Diego State college, Humbolt State, Sacramento State, University of California, Davis, Chico State college, Long Beach State, Kellogg Campus of Cal-Poly, San Luis Obispo, and the new L. A. State college, San Fernando Valley Campus, Northridge, Calif.

"Each negotiation," said Keichline, "constituted a separate selling effort," indicating all eight separate projects were sub-contracted to local-area air conditioning contractors by each general contractor involved on the several projects.

Two types of Drayer product are involved: The company's low headroom, remotely-installed "Spotaire LRC" series for room-by-room installation; and "HH series" air handling units which will condition lounge and recreation areas.

Production commitments indicate, in later stages, approximately 900 units per month will be dispatched to the various job-sites from the L. A. factory.

WHAT . . WHEN . . WHERE

National Electrical Manufacturers Association Meeting
Nov. 10-14, Traymore hotel, Atlantic City, N. J.

National Association of Practical Refrigerating Engineers Meeting
Nov. 11-13, Kenilworth hotel, Miami Beach, Fla.

Better Heating-Cooling Council Meeting
Nov. 17-19, New York City.

National Commercial Refrigerator Sales Association Convention
Nov. 17-19, Golden Gate hotel, Miami Beach, Fla.

Refrigeration Service Engineers Annual Convention
Nov. 21-24, Neil House, Columbus, Ohio.

American Society of Refrigerating Engineers Meeting
Dec. 1-3, Roosevelt hotel, New Orleans.

National Warm Air Heating & Air Conditioning Association Convention
Dec. 4-5, Statler Hilton, Cleveland.

Dairy Industries Exposition
Dec. 8-13, Navy Pier, Chicago.

International Heating & Air Conditioning Exposition
Jan. 26-29, Convention Hall, Philadelphia.

1,100 Capehart Homes At Beaufort, S. C. Get Year-Round Systems

LEBANON, Ind.—The Heating & Air Conditioning Div. of Stewart-Warner Corp. here has started deliveries of air conditioning equipment for 1,100 new brick homes being constructed under the Capehart military housing act for Marine Corps and Navy personnel at Beaufort, S. C., William C. Judd, general manager, has announced.

A similar contract for air conditioning 426 military homes at Ft. Rucker, Ala., was recently completed by Stewart-Warner.

The new contract calls for 960 3-hp. and 140 4-hp. remote thermal expansion air conditioning compressor units, with matching condensing coils and cases on the furnaces, Judd said.

The new homes, located on Broad River, were designed by Reid Hearn & Associates, Columbia, S. C., general architect, and "are unique in that each is of a different design," it was stated.

Albert Gersten & Associates is the general housing contractor, while installation of the air conditioning equipment is by McKee & McHale, heating and air conditioning contractor, Philadelphia.

Luxury Apartment Bldg. Gets Year-Round System

SPRINGFIELD, Ill. — Town House, a new 13-story luxury apartment building near downtown Springfield, is completely year-round air conditioned with a high velocity Worthington system installed by the Henson Robinson Co. here.

Each of the 94 apartments has control of its own indoor climate.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

PLAN YOUR HEATING FOR THE SALES APPEAL

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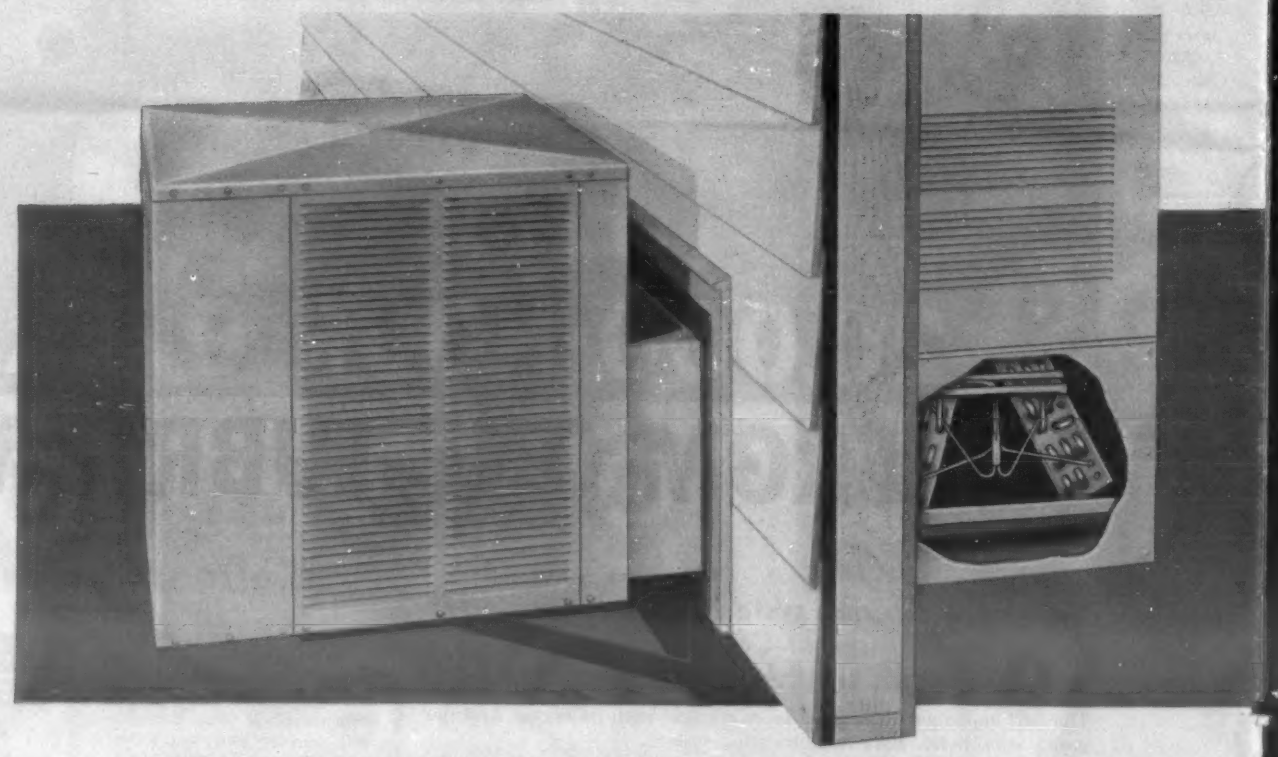
SLIDES IN LIKE A DRAWER!

SLASHES INSTALLATION COST UP TO 50%!



PROVIDE FOR LOW COST AIR CONDITIONING NOW...OR LATER—WITH EVERY NEW FURNACE YOU SELL!

Another Frigidaire First! Installed For a Year at NAHB Research House

Here's a completely new concept in full-home air conditioning—the Frigidaire Trans-Wall System! New "slide-in" Trans-Wall Units are now in production after a full year in an actual installation at the NAHB (Home Builders) Research House, Kensington, Md.

The Frigidaire Trans-Wall System is the simplest, most compact year-round comfort maker ever devised. Here's why! The complete *all-in-one* Trans-Wall Unit consists of an air-cooled condensing unit with twin Super Meter-Miser Compressors plus a "wall-sleeve" that slides through wall to furnace, and a high-efficiency "inverted V" cooling coil that fits into pre-installed housing to give full-home conditioning with any Frigidaire furnace.

Ready to Install—FAST!

All internal wiring is done, refrigerant lines connected, system sealed and checked by the factory. With the furnace located at an outside wall of the house and coil housing in place, all you do is slide Trans-Wall in place and wire in. Trans-Wall System utilizes furnace blower and ductwork.

Get the full profit potential story from your nearby Frigidaire District Headquarters *today!*

While Others Dream of the Future— FRIGIDAIRE

What Women Want from Heating System—

Even Flow, Humidity Control, and Freedom from Dust, Noise; They See Relationship Between Good Heating and Health

WASHINGTON, D. C—An even flow of heat, freedom from dust, humidity control, and freedom from noise are what women want most in their heating systems, delegates to the Women's Conference on Housing indicated.

Some 79 housewives from 32 states gathered in the National Housing Center here recently to tell builders what they liked and didn't like about their homes.

(Their thinking on air conditioning was reported in the Nov. 10 issue of the NEWS, pages 9-11.)

Many said they would like manufacturers to give them trouble-shooting manuals so they could take care of minor troubles themselves. One woman said she objected to paying a serviceman to come out and push a reset button, when she could have pushed it herself if she had known what to do.

Delegates agreed that purchase of a heating system was a joint husband-wife decision. Cost of equipment and operation were also important factors in selection of type of equipment.

They saw a direct connection between good heating and health. They feared drafts cause colds, dry air and dust lead to sinus troubles, and dry air causes dry skin.

Improvements they would like to see in their heating systems include added humidity, more cold air inlets, improved filters (the present ones aren't adequate, they say), quieter operation, reduction of drafts, elimination of radiators, and more thermostats.

A majority of the ladies preferred hot water heat with baseboard heating and particularly copper baseboard preferred.

Most women admitted that they knew little about the various types of heating and would like to know more about their advantages and disadvantages.

At one table of south central states women, for instance, great interest was shown in radiant heating until they learned that they would have to have a separate system for air conditioning. Then interest dropped sharply.

Delegates particularly wanted to know more about thermostats, safety features, fuel advantages, price comparisons, and trouble shooting.

Some women complained that register locations make it hard for them to decorate. They said heating contractors used poor judgment in register locations.

Delegates felt that the heating system should last 20 years or more without major repair. Some thought it should last as long as the house.

They didn't care much where the furnace was placed in the house, just so it was out of the living space. One woman objected to putting it in the attic on safety grounds. But, wherever it was placed, they wanted it accessible for service.

A high percentage of the delegates heated with gas and were satisfied with results from their fuel.

Asked to select from a list of home improvements the items they would most prefer—assuming they could afford to pay for them—only eight women selected zoning their heating system at $100 per zone. Half of these were from the Pennsylvania-Ohio area.

OF LOW COST FRIGIDAIRE AIR CONDITIONING

full-home air conditioner

TRANS-WALL FITS EVERY TYPE FRIGIDAIRE FURNACE —OR OTHER CONVENTIONAL FORCED-AIR SYSTEM!

New—completely self-contained air-cooled package

Simplified installation

No concrete base needed

Factory-sealed

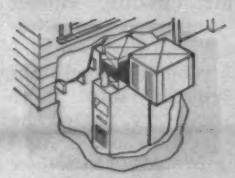
Uses furnace blower and ductwork

No plumbing for water supply

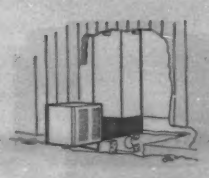
No refrigerant connections

Two sizes 24,000 and 35,000 BTU/hr.

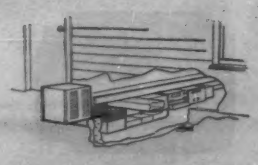
Twin compressors



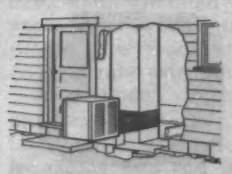
BASEMENT TRANS-WALL SYSTEM
Trans-Wall Unit slides into coil housing above Frigidaire Vertical Upflow Type Furnace. Adaptable to Lowboy Type.



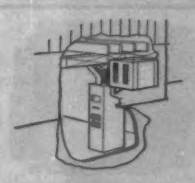
SLAB TRANS-WALL SYSTEM
Trans-Wall Unit installs under Frigidaire Vertical Downflow Type Furnace in housing.



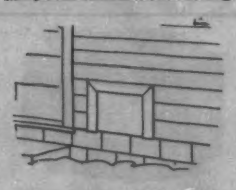
CRAWL SPACE TRANS-WALL SYSTEM
Frigidaire Horizontal Type Furnace. Trans-Wall Unit installs in crawl space with plenum added below coil housing.



CRAWL SPACE TRANS-WALL SYSTEM
Trans-Wall Unit installs under Frigidaire Vertical Downflow Type Furnace. (Modified Slab hook-up.)



TRI-LEVEL TRANS-WALL SYSTEM
Trans-Wall Unit, bracketed above ground level, installs in coil housing above Frigidaire Vertical Upflow Type Furnace.



ROUGH-IN NOW—INSTALL LATER
Locate new furnace adjacent to outside wall, add coil housing and prepare wall opening. Slide in Trans-Wall Unit at later date.

SIMPLIFIED INSTALLATION! TRANS-WALL UNIT SLIDES INTO WALL OPENING 14" x 24"

Less than 350 lbs. net weight, new AIAZ-240 Frigidaire Trans-Wall Unit is easily installed by two men using ordinary tools. Trans-Wall easily adds a full 24,000 BTU/Hr. of Dry-Cool Comfort in virtually any style home after furnace and coil housing have been installed.

1. Rough-in opening. 2. Attach outside mounting brackets (furnished). 3. Complete installation by sliding Trans-Wall Unit in place—connect control box (furnished) and wire in. 35,000 BTU/Hr. unit weighs 370 lbs. and requires slightly larger wall opening 17¾ x 24".

FRIGIDAIRE GAS OR OIL-FIRED FURNACES— A TYPE FOR EVERY NEED, A SIZE FOR EVERY HOME

Whatever size or style home, Frigidaire has the *right* heating equipment. It's all trimly compact, attractively styled in baked-on beige enamel finish, with smooth corners and safe, cool exteriors to give extra satisfaction to your customers. Extra value, too, because Frigidaire Furnaces are designed to team up perfectly with Frigidaire Cooling Equipment.

VERTICAL HORIZONTAL LOWBOY

Choose from four types of furnaces: Vertical Upflow, Vertical Downflow, Horizontal or Lowboy. Adaptable to all sections of the country with choice of fuels including oil, or natural, artificial, mixed or L.P. gas. Capacities up to 190,000 BTU/HR for gas-fired models (A.G.A. approved) and up to 151,200 BTU/HR for oil-fired furnaces (listed with U.L.). Quiet, high-capacity centrifugal blowers. Factory-wired precision controls.

FRIGIDAIRE DIVISION,
General Motors Corporation, Dayton 1, Ohio

IS ON THE MARCH!

GM GENERAL MOTORS FRIGIDAIRE *Built and Backed by General Motors*

Full-Page Ads Launch Chicago Utility's Electric Heat Drive

CHICAGO—Full-page ads in four Chicago daily newspapers launched Commonwealth Edison Co.'s advertising campaign to capture a greater share of the home heating market for electricity.

The advertisements stress straightforward information about the advantages and cost of electric heating, according to Morgan F. Murphy, vice president in charge of advertising and public relations.

In addition to the metropolitan dailies, some 300 neighborhood and community papers in Edison's 11,000-sq. mile service area are being used.

Simultaneously the comforts of electric heat were scheduled to be aired on utility-sponsored editions of CBS-TV's "In Town Tonight" show and spot-campaigned on company-sponsored radio programs.

Furnishing additional support were trade ads in building and electrical magazines, consumer brochures, and special trade-aimed promotional pieces, it was announced.

In preparation for the promotion of electric heating, Commonwealth has been holding company-wide training and education meetings for employes, builders, and electrical contractors.

In various division locations, the utility also is sponsoring special electric space heating schools for electrical contractors.

Commonwealth Edison last July made available to its customers a new rate which reduced electric heating costs by about 30%. The lower rate, coupled with recent developments in heating equipment and better standards of home insulation, is expected to enhance the marketability of heat-by-wire systems in Chicago and northern Illinois.

Already, new electric heating has been specified for more than 900 homes and apartments in the Chicago area and is exclusively featured in several large-scale home building developments, according to the announcement.

Jay H. Maish Named New Lau Ad Agency

DAYTON—Lau Blower Co. has appointed Jay H. Maish Co., Marion, Ohio, as its advertising agency, according to Onni L. Raita, Lau's advertising manager. David Burnap is account executive.

Raita said Maish will be responsible for all advertising and collateral sales promotion material.

York Heating, Cooling Line--

(Continued from Page 1)

Rising, vice president and director of marketing, who revealed broad plans for an extensive sales activity, and Robert E. Cassatt, general sales manager of packaged products, who acted as meeting chairman and introduced the new products.

They include lines of room, central residential, commercial, and industrial air conditioners, oil and gas furnaces, and automatic ice makers.

Cassatt claimed York's new heat pump is capable of cooling in 115° F. temperature or heating in zero climates, using outside air as the heat source in both instances.

The heat pump is a house-sized version of the large-size commercial heat pump developed by York engineers in 1956. Cassatt said York is "so pleased with the success of our miniaturized heat pump that it is installed with a five-year warranty on both the cooling and heating circuits."

He said the Comfort Center, a packaged furnace and air conditioner, will fit anywhere in the home, even in the living room, and will provide uniform temperature and humidity conditions throughout the year. It also "insures pure air" by a new method of electronic filtering said to be unusually effective.

"The electronic filter (said to be of new exclusive design) strains out tiny particles invisible to the naked eye, particles as small as 1 micron or 1/25000 of an inch. Mold and bacteria particles are removed by this new electronic method, which consumes no more current than a 15-watt light bulb.

"Cool, dehumidified air is supplied by not one but two air conditioners, one being a reserve system that cuts in only during peak periods. The cooling coil is located within the furnace section, the heat exhaust outside. The indoor and outdoor units are joined together by hermetically sealed tubing."

ABOVE: York "Pathfinder" air conditioner is installed through the wall in this residence. Multiple installations are said to be ideal for stores or offices. Through-the-wall kit makes this installation simple and economical.

RIGHT: York Comfort Center—Application of modern electronics and "Silver-V" gas burner provides economical, safe year-round comfort to entire house, it is claimed.

Heat is provided by a York "Silver V" gas burner. Two rows of flames are claimed to spread the heat faster, "providing more heat for the same amount of fuel."

The Comfort Center is offered in two basic styles: "Upflow" or vertical, five capacities, and "Low-Boy," three capacities.

Room Units Feature Quiet Operation

The 1959 room air conditioners are claimed to be exceptionally quiet due to acoustically designed air circuits, rubber mountings, and fans "suspended in space."

York's 19 room air conditioners are grouped into three series, all brand-new, named the "Medalist," "Citation," and "Metropolitan." All have new "cooling-maze" coils, said to provide greater air contact for faster cooling and to remove 30% more humidity than coils of older design. Cooling-maze coils, copper tubes with aluminum fins, are also standard on York central air conditioners.

"Instead of flat fins and straight tubes, the cooling coil has rippled fins and staggered tubes," it was explained. "The air is forced to twist, turn, and ricochet through the maze and in so doing it comes into the greatest possible contact with the cooling surfaces. This not only means faster cooling but greater humidity removal because the rows of ripples scrub out the moisture in much the same way dirt is scrubbed out from a shirt rubbed on a corrugated washboard."

Compressors for the 1959 room conditioners are all 1 hp.

The three models of the York Medalist series weigh 98 lbs. net weight and the cabinet measures 22 in. wide, 13 15/16 in. high, and 15½ in. deep. When installed in a window, the Medalist is flush both inside and outside. A "snap-in" installation kit "allows the purchaser to install it himself with no more tools than a penknife," it was stated.

The Medalist draws 7½ amperes. One model operates at 230 volts, two at 115 volts. One of the latter has a reverse cycle.

The York Citation series, four models, is "larger and more luxurious." All Citations have a cabinet 24 7/16 in. wide, 14 13/16 high, 21 in. deep. The Citation is featured by a "floating front," allowing it to be installed either flush inside or flush outside. When installed flush outside, the floating front makes a decorative adjunct to the room.

Of the four Citation models, one is for operation at 115 volts, one at 208 volts, and one at 230 volts. The fourth, also for 230 volts, is equipped with a reverse cycle.

Still larger and more deluxe is the York Metropolitan series, also featured by floating-front styling. Three of its 12 models are "Acoustamatics," specially engineered for quiet operation. When working at full capacity, an Acoustamatic is claimed to make less noise than an ordinary household fan.

Each Metropolitan model is equipped with a large-size aluminum filter, 12 by 20¼ in., which will not burn nor deteriorate, according to York. The "duo-cycle" principle of starting turns on first the fan, then the compressor, eliminating the danger of shock overloads on the electrical circuit, it was pointed out.

The cabinet size of all Metropolitan models is the same—26⅞ in. wide, 17 15/16 in. high, and 27 31/32 in. deep. Three models have a reverse cycle.

New Engineering for Air-Cooled Units

New engineering features for air-cooled central air conditioning improve efficiency and increase operating economy to the homeowner, the company said.

There are three central systems, suitable either for residential service or for stores and offices. These are: the "Pathfinder" for low-budget central air conditioning, the "Twinline," which has two complete cooling circuits, and the "Champion" for heavy-duty cooling applications up to 15 tons. All have the same cooling-maze coil and automobile-type compressors used on the room air conditioners.

The Pathfinder, a wholly self-contained unit, can be installed in an attic, basement, utility room, or garage. There are three Pathfinder models: P24F with one 2-hp. compressor, P36F with one 3-hp. compressor, and P48F with two 2-hp. compressors.

The duplicate circuits of the Twinline "make starting easier, cut operating cost, and enable quick adaptation to weather changes," it was stated. "The heat-exhaust section is placed outdoors; the cooling coil inside, hidden in ductwork or located above a furnace. The line includes three models: HA36 with two 1½-hp. compressors, HA48

(Concluded on next page)

Break the BARRIER and close the sale

SELL ON TIME — COMMERCIAL CREDIT PLAN

A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over $200,000,000 . . . offices in principal cities of the United States and Canada

Most of your prospects need their cash reserves and usual lines of credit for current operations. Break through this financial barrier. Make it easier for the prospect to sign on the dotted line by including financing arrangements. COMMERCIAL CREDIT's Refrigeration Plan is backed by many years' experience in your industry—experience in handling financing for thousands of commercial refrigeration and air conditioning installations.

Let us show you how COMMERCIAL CREDIT experience and know-how saves you time and money . . . and helps you close sales with less delay. Call the nearest COMMERCIAL CREDIT office or write COMMERCIAL CREDIT CORPORATION, 300 St. Paul Place, Baltimore 2, Md.

Make your proposals complete . . . include financing with COMMERCIAL CREDIT PLAN

York Line for '59

(Concluded from preceding page)

with two 2-hp. compressors, and HA72 with two 3-hp. compressors.

The Champion is said to combine flexibility with remote installation. It can be tailored to fit the individual home, office, or store and is available in either air-cooled or water-cooled models, 10 and 15-hp. capacities. Like the Twinline, two independent cooling systems are built into each Champion.

Commercial, Industrial Air Conditioners

The York "Embassy" line of commercial and industrial air conditioners includes six models, ranging in capacity from 3 to 22½ hp. "All are packaged units than can be easily moved to meet changing requirements," York said.

York's 1959 line also includes both oil and gas furnaces. "Particularly notable," the company said, "is the newly-designed gas furnace with the 'Silver V' burner."

The new gas furnaces are offered with built-in air conditioner (Comfort Centers) or in the deluxe "Climaster" series and economy-priced "Challenger" series. There are upflow, basement, and horizontal types.

Oil furnaces include horizontal types for space-saving installation in attic or crawl space as well as upflow, counterflow, and basement types.

The oil-fired furnaces are also offered in three series: the "Climaster," adapted easily to cooling for year-round air conditioning; the "Patrician," combining both heating and cooling in a compact package, and the "Challenger."

Some Ice Makers Feature 'Selector Dial'

Some of the 1959 ice maker models now feature a "selector dial." The user can dial for either "King Size" (thick crescents), "Icelets" (thinner crescents), or "Thinice" (nearly flat wafers).

Three ice makers, capable of producing, respectively, up to 200, 225, or 450 lbs. of ice a day, are equipped with the selector dial. Six other ice makers, with maximum capacities ranging from 300 to 8,000 lbs. of ice per day, produce ice flakes.

In his talk to the distributors, Haase declared.

"We will pay particular attention to consumer benefits in the advertising and merchandising of our home air conditioners. We feel that the entire industry has limited its growth by failing to properly tell its story to the American public. Although our prices will remain competitive, York is going to stress the quality, convenience, and performance of its products.

"There is only one real reason why 93% of our homes and 73% of our businesses are not air conditioned — other industries have been doing a better job of selling the public on the advantages of using their products while air conditioning manufacturers, distributors, and dealers have devoted most of their effort to talking price."

Haase declared that value, rather than price, is a greater factor in determining consumer purchases today than at any time in this country's history.

"Certainly, price will never cease to be one of the elements governing the way consumer dollars are spent but quality and desire have more to do with discretionary spending today and will continue to grow in importance during the next few years if our economy maintains its present pattern.

"Once he has decided on the product he wants or needs, the average American still likes to shop for price. The air conditioning industry has been putting the cart before the horse."

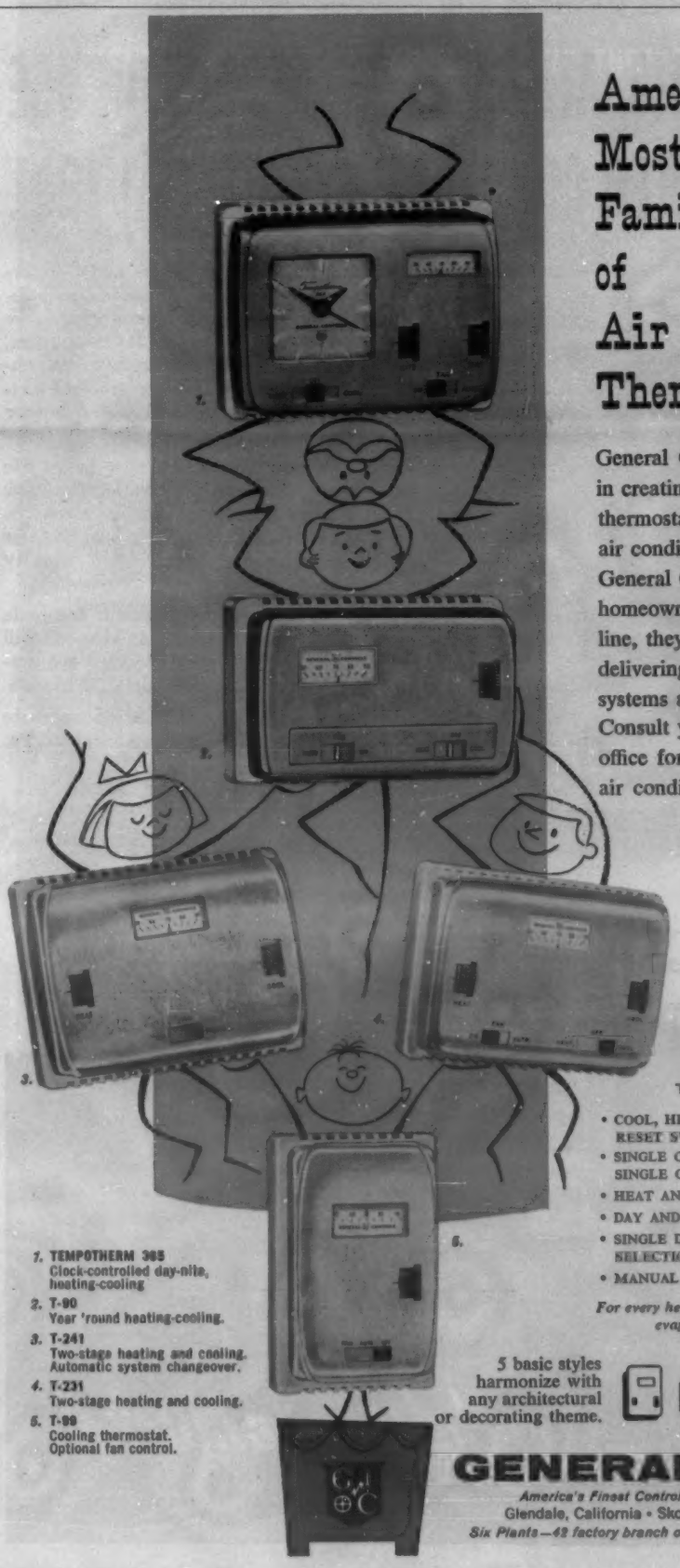
The York president said that if a large percentage of homes are to enjoy the benefits of air conditioning and if dealers are to make a fair profit for their efforts, greater "creative selling" is needed. He promised that York would not only lead the way but would also follow through to make sure that the proper selling practices were carried out at all levels of distribution.

Noting that both York and Borg-Warner are spending substantial sums on product research and market development, Haase said "we have developments on the drawing boards and in test installations that will make air conditioning even more essential to health and comfort.

"Although they will not alter the vast potential market for many of our present products, we are perfecting new gas, oil, and electric powered heat exchangers that are marvels of size and efficiency. Built in between the studs of new homes or adapted to existing buildings, these units will combine with unique cooling, dehumidifying, and air cleaning systems to give the owner complete control over the indoor climate of his home," Haase stated.

LEFT: Before leaving her room, this young lady sets her York "Medalist" air conditioner for the proper temperature so that her bedroom will be comfortable when she returns.

RIGHT: With York residential heat pump all the floor space is clear. Here's an installation in a large recreation room.



America's Most Complete Family of Air Conditioning Thermostats!

General Controls continues to set the pace in creating the kind of *advanced design* thermostats that afford maximum selectivity in air conditioning thermostats. Not only do General Controls thermostats please the homeowner with their beauty and simplicity of line, they also signify *quality*—and prove it by delivering the top performance engineered into systems and related equipment.
Consult your nearby General Controls branch office for complete details on the many air conditioning thermostats available.

ALL WITH MODERN MERCURY SWITCH DEPENDABILITY...

118 FUNCTION VARIATIONS TO CONTROL ANY SYSTEM

- COOL, HEAT, FAN, AUTO, OFF, RESET SWITCHING FUNCTIONS
- SINGLE OR TWO-STAGE HEATING WITH SINGLE OR TWO-STAGE COOLING
- HEAT AND COLD ANTICIPATION
- DAY AND NIGHT CLOCK PROGRAMMING
- SINGLE DIAL OR TWO DIAL TEMPERATURE SELECTION
- MANUAL OR AUTOMATIC CHANGEOVER

For every heating and cooling requirement: gas, oil, coal or electric; evaporative, chilled water and heat pump systems.

5 basic styles harmonize with any architectural or decorating theme.

GENERAL CONTROLS

America's Finest Controls for Home, Industry, and the Military
Glendale, California • Skokie, Illinois • Guelph, Ontario, Canada
Six Plants—42 factory branch offices serving the United States and Canada

PHCIB Aims To Move Contractor, Consumer Closer Together In '59

NEW ORLEANS—"A balanced program designed to bring the trade and the consumer closer to each other at the point of sale" was adopted for 1959 by the board of directors of the Plumbing-Heating-Cooling Information Bureau at its annual meeting here.

A budget goal of approximately a quarter of a million dollars was approved by the board for 1959 operations.

Described as "a basic program that is needed by the industry at this time," the new program is "directed at producing more effective trade action at the local level on the one hand and stimulating consumer action towards our products and services on the other and starts to close the gap between consumer and contractor."

Howard L. Spindler, vice president, public relations, American Radiator & Standard Sanitary Corp., was elected president of the bureau.

Other officers elected are: W. A. Fitzpatrick, Dayton, vice president; V. J. Killian, Winnetka, Ill., treasurer; and Norman J. Radder, Chicago, secretary. Norman Wicks is executive director.

Continued promotion of modernization, the initiation of activity in sales training, and an employe participation program are the elements of the trade action program.

The consumer action program includes consumer research and the continuation of PHCIB publicity with expansion in new directions. A motion picture was also approved following the research findings and achievement of the budget goals.

To Set Up Sales Development Institute

The board authorized the establishment of a Sales Development Institute within PHCIB and the development of an initial program of improved selling designed for the contractor.

In initiating the sales training program, members of the board concurred that this is the single most important trade activity the bureau can undertake.

In 1959, PHCIB will continue to promote local-level organized modernization campaigns.

Built around time payment selling and free inspection, PHCIB already has available some of the support materials required—direct mail pieces, ad mats and proofs, commercial and public service spots and interviews for radio and TV, stories and features for newspapers, talks for local groups.

"NEWS from PHCIB," trade press releases, and bureau staff field work will continue to promote local level selling efforts on a year-round organized basis.

The board objective for the employe participation program is to induce the employe to recognize his importance and to make him an effective salesman for the industry.

In commenting on this phase of the bureau's future activity, President Spindler said: "The employe participation program can be regarded as the opening wedge in our effort to get a million people to say good things to other people about our industry."

The bureau will provide a brochure for employe distribution, create materials for company bulletin boards, articles for house organs, and other materials for this program.

The purpose of the consumer action program is to achieve increased public knowledge, understanding, and desire for the products and services of the plumbing, heating, and cooling industry.

Two basic phases of this program in 1959 will be consumer research and consumer publicity.

"Consumer research," said Executive Director Wicks, "will help us uncover areas of sales opportunity and also to learn how to present ourselves in a more favorable light to consumers, architects, and builders.

"We want to learn what the consumer is thinking about our industry and what his objections may be to the purchase of plumbing, heating, and cooling equipment and services."

Pilot Study Approved

The board approved a preliminary pilot study to be undertaken as soon as possible after the PHCIB's Research Council has conducted its study of the research plan.

The second phase of the consumer action program is the continuation of the production and distribution of releases to newspapers and the preparation of special articles for consumer magazines, particularly those in the shelter group. In his report Wicks referred to a survey made by the bureau which disclosed the high rate of acceptance of its releases among leading daily newspapers.

Also included in this program is the development of a "Facts" book abut the industry for the use of newspaper and magazine editors and others who influence public opinion.

Will Make Movie for TV

Another phase of PHCIB's Consumer Action program approved for 1959 was a motion picture designed for TV distribution and for club and school use to stimulate consumer interest in and desire for the products and services of the industry through an appreciation of their importance.

However, this project would be undertaken following the availability of the consumer research findings and after the budget goal has been achieved.

Morris Stein, president, Torrington Supply Co., Inc., Waterbury, Conn., was appointed chairman of PHCIB's Finance and Membership Committees and will direct the bureau's membership drive for 1959. Stein reported confidence in the ability of his committees to reach the budget goal.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

SO HALSTEAD & MITCHELL ENGINEERS SAID . . .

FOR AUTOMATIC, ALL-WEATHER OPERATION USE H&M AIR-COOLED CONDENSERS WITH LIMITROL

All-weather operation of air conditioning and refrigeration units is automatic—no manual changeover is required—when the exclusive Limitrol modulating valve is used with Halstead & Mitchell's air-cooled condensers. The Limitrol effectively maintains balance between condenser and compressor under all outdoor ambient conditions by regulating condenser capacity. And winter problems with water-cooled systems are avoided.

H&M's air-cooled condensers with exclusive Turbu-Flo fin design allow peak Btuh at the evaporator. The embossed, streamline pattern provides better air wash, reducing air film resistance, and improving heat transfer by up to 15%. Wide fin spacing assures rated capacity longer. Service costs are less, too.

Installations involving many condensing units are made much easier and less costly. Halstead & Mitchell will provide multiple circuiting to meet specified requirements (if requested) at no extra charge—on all 12 models.

Call your wholesaler for more information or write Halstead & Mitchell, Bessemer Bldg., Pittsburgh 22, Pa.

SEND FOR NEW BULLETIN AC-101

'Turbu-Flo air-cooled condensers for remote installations'

Cooling Giant Magnetic Field

100-Ton Chiller Supplies Water

UPTON, N. Y.—Holding protons up to energies of three billion electron volts — more than the energy of some cosmic rays — calls for a quick, sure way to cool the magnetic holding force.

This force, produced by a 2,000-ton electromagnet at Brookhaven National Laboratory, literally spins protons around a 75-ft. orbital path at the rate of three million times per second.

The giant particle accelerator, called the "Cosmotron," holds protons on an even course while a radio frequency amplifier adds 1,000 volts to the energy of the protons each time they circle the accelerator.

To cool the giant electromagnet, scientists designed a system to flow water at 500 g.p.m. through the copper windings of the magnet coils. At the heart of the system is a Patterson-Kelley water chiller capable of supplying 100 tons of refrigeration per hour.

The chiller—on the water side—is made entirely of nonferrous metals to provide long lasting service with the demineralized water. System is operated by two 50-hp. compressors.

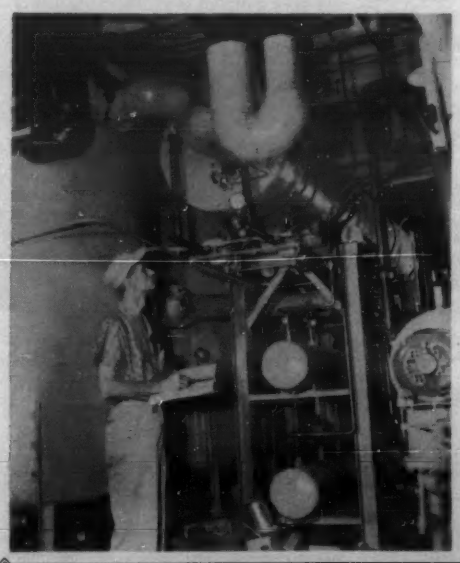
"Cooling begins with water which passes through the P-K 'Freon' refrigerant chiller at the rate of 300 g.p.m. and is circulated to the Cosmotron cooling system at an average temperature of 53° F.," Patterson-Kelley explained. "In order to maintain low electrical conductivity, the water is passed through a Permutit ion-exchange system before entering the magnet coils.

"Originally a closed system, the cooling process has been modified by two 1,000-gal. storage tanks, reducing the water to 45° F. and allowing it to rise to 60° F. before entering the chiller. This produced an additional 80 tons of refrigeration per hour.

"Cooling water flows through coil windings of the magnet. The 48-turn windings are fabricated from 50-ft. lengths of ¾-in. by 1⅞-in. copper bars, with each turn having a ⅜-in. internal cooling hole along its axis. The turns, electrically in series, are water cooled in parallel.

"The Cosmotron is divided into quadrants, with each section containing 72 steel magnets. At the end of each quadrant, a copper manifold with 96 outlets connects the water system to the coil end of the conductors to form a separate cooling system for each of four sections.

"Flow meters in the water line for each conductor are arranged to give warning signals for any flow failure, and inlet-outlet temperatures of each quadrant are measured and metered. The two-circuit chiller further safeguards the cooling system. If one circuit becomes plugged, the other circuit remains in operation to supply cooling water."



AT BROOKHAVEN National Laboratory, H. E. Vanderoef, lead man, refrigeration and air conditioning, checks the liquid temperature gauge on a Patterson-Kelley chiller which supplies 100 tons of refrigeration for the cooling system of a proton accelerator. Cooling water is flowed at the rate of 500 g.p.m. through the coils of the giant electromagnet used to speed protons up to energies of three billion electron volts.

Hermetic Chiller Cools Soluble Oil, Transformers In Welding Operation

WARREN, Ohio—A refrigeration unit has lowered cost in the process of producing resistance electric welded tubing at the Van Huffel Tube Corp. here, it has been reported.

Manufactured by The Trane Co., the automatic cooling unit serves in two ways.

The main purpose of the 200-hp. "CenTraVac" is to keep emulsified oil at a temperature of 60° F. The oil mixture, which is 95% water and 5% oil, is used to remove heat from the tubing after welding.

Before the Trane unit and a cooling tower were installed, cost of cooling water for the welding process was high, and water was often unobtainable.

The reasons behind these problems were that the city cooling water had to be continually wasted to the sewer after use in the system, and during summer months, the incoming water was often at temperatures too high for proper cooling, it was explained.

With the "CenTraVac," the soluble oil is kept at just the right temperature, according to Trane. Chilled water supply is at 45° F.

The cooling system operates by sending chilled water through a counterflow type heat exchanger where the oil mixture is cooled to the 60° temperature.

In addition to the job of soluble oil cooling, the CenTraVac also cools transformers used in the welding operation.

THE "BRAIN" THAT DOESN'T GIVE TUBING A "BREAK"
MAGNATEST
This is Viking's Newest "Brain"!
It is another unique application of electronic technology in Viking's modern specialized plant . . . making certain that Viking thin-wall copper tubing is absolutely free of breaks, pinholes, or other imperfections.
The "Brain" not only seeks out the minutest defect in the wall of tubing passing through its field of sensitivity, but automatically marks faulty spots and discards the tubing so it cannot be used.
The electronic "Brain" is typical of many advanced procedures employed in the manufacture of Viking copper tubing to assure users trouble-free fabrication and perfect performance.
It is through these quality controls that Viking has become the principal source of thin-wall tubing for America's leading manufacturers of air conditioning and refrigeration units and coils.
VIKING
COPPER TUBE CO.
CLEVELAND 10, OHIO
PRECISION DRAWN SEAMLESS COPPER TUBE

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

When put into practice nationally, Norris envisions that older homes will be bought and resold in the same way that auto dealers turn over used cars, thus relieving homeowners of the re-sale burden.

He also anticipates that practical financial plans will be worked out so that owners of older or "unmodern" houses may quickly and economically up-grade themselves into a better residence which they might desire to buy—through a national "trade-in" system.

"Today's quality home," Norris concludes, "includes many construction features, materials, and equipment not on the market 10 years ago."

Best example: central residential air conditioning systems specifically designed for quiet, healthful, *cleanly* and *prideful* low cost operation.

You're Breathing Hard, Man

Man's days on earth are numbered if he keeps dirtying up his planet, Dr. Rex H. Wilson, medical director of The B. F. Goodrich Co., told a meeting of heating and plumbing contractors which we attended recently.

Dr. Wilson declares that humans have the unfortunate ability to contaminate everything with which they come in contact.

"Science must teach us how to decontaminate ourselves and our surroundings. If not, eventually we will find our world so polluted that we cannot live on it."

Atmospheric pollution is becoming increasingly serious as population growth and industrial expansion add to the volume of poisons discharged into the ocean of air that surrounds us.

"It is no longer news that man-made smog can be constantly annoying and occasionally lethal," Dr. Wilson comes to grips with a terrifyingly serious problem.

The fact that every large city in the world may be plagued with these conditions in the future creates a problem for the physician as well as the air pollution control scientist."

O.K. Can't the air conditioning industry help solve this riddle of survival? H-bombs may never kill us, but smog could!

Carrier Humanizes

Never has "Dope" received better human-interest photographs than those on this page. They are published here after belated receival from Syracuse, New York; and they pertain to a Carrier outing.

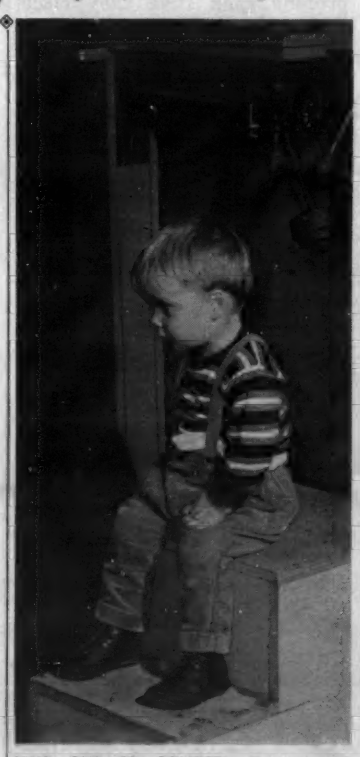
Obviously a carefree, holiday mood hovered over Carrier Parkway, where a throng of some 15,000 Carrier employes and their families enjoyed the first open house that firm has held in 11 years. Also included were retired employes and their families.

As you can see from these pix, it was a heartwarming good time for all.

Highlight of the tour route was the new Administration and Research Center, unchallengedly described by Chairman Cloud Wampler and President William Bynum as "second to none in the industry."

The Research and Development area of this center flung open its laboratory doors to the employes and their kids. There, scientifically-minded youngsters and their parents could see how scientists, engineers, and technicians study heat transfer surfaces, refrigerants, and the behavior of fluids, as well as machine parts, electrical motors, lubrication, and corrosion resistance.

"HELLO, YOUNGSTER!" — Carrier Corp. Chairman Cloud Wampler greets little Steven Riddler, son of employe Paul Riddler, in new Administration and Research Center lobby. Dad, an industrial engineer, hovers in background.



TIME OUT TO PONDER — Two-year-old Michael Greczyn, son of Machinery & Systems Div. employe Leon Greczyn, takes a breather during Family Day tour.

Some 10,000 balloons were hoisted by small fry before the weekend festivities ended.

And, while their older brothers and sisters viewed Dad's (*and* in some cases Mom's) working quarters, many of the two to six-year-olds settled for coloring books, modeling clay, and story-telling in the Carrier Recreation Center, where a nursery was set up with playleaders and nurses to provide fun and care.

Carrier came to Syracuse in the midst of the Depression (1937). At that time it employed approximately 1,000. It has grown, in a fifth of a century, to a firm encompassing plants in eight states, Canada, all around the world, and to a corporate family with a total employment of more than 13,000.

These wonderful "human interest" pictures were taken at this shindig.

McQuay RADIAL UNIT COOLERS NOW IN ALUMINUM CABINETS

The New McQuay Radial Unit Cooler—Eight compact aluminum cabinet models ranging from 2,600 to 14,000 Btu/hr at 10° T.D. All have the newly designed hinged aluminum drain pan for easy installation and maintenance.

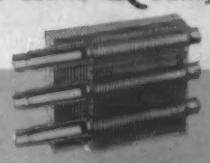
for LONGER LIFE
LIGHTER WEIGHT
BETTER PERFORMANCE

The new line of McQuay aluminum cabinet radial unit coolers is not just the best—it's the very best! You not only get longer life, but aluminum construction means a more attractive appearance and more ease of handling as well. The new hinged drain pan is a standard feature and all McQuay radial unit coolers are supplied with the famous McQuay Ripple-Fin coils which incorporate "Tube within a tube" heat exchangers without additional cost. For the very best radial unit coolers in every way, use McQuay. See the McQuay wholesaler in or near your city, or write McQuay, Inc., 1607 Broadway Street N.E., Minneapolis 13, Minnesota.

McQuay INC.

AIR CONDITIONING • HEATING • REFRIGERATION

McQuay Means Quality



McQuay units feature the exclusive Ripple-Fin coils which create maximum turbulence and have wide, full fin collars that act as automatic spacers to form a tube around the coil tube for positive, permanent bond, greatest heat transfer and protection.

Discussing 'Customer Satisfaction' Program

IMPROVED customer satisfaction is subject for discussion as C. B. Ramsdell (back to camera) discusses 1959 plans with marketing team now functioning at new Tyler, Texas headquarters. (l. to r.) L. H. Hirschbach, manager, sales and distribution; W. F. R. Karsten, manager, commercial engineering; J. J. Heffernan, manager, advertising and sales promotion; R. D. Roley, manager, product planning; W. A. Mulcock,, manager, sales and distribution; (foreground) and J. A. Sherman, manager, marketing administration.

* * *

G-E Cooling Dept. Moves Headquarters To Tyler, Texas

TYLER, Texas — Headquarters of General Electric's Air Conditioning Dept. has now been settled at its new $15 million plant here, the move from Bloomfield, N. J. being completed, reports C. A. Salmonsen, general manager.

The G-E Air Conditioning Dept. manufactures central heating and cooling equipment for home, commercial, and industrial applications. Range of cooling equipment extends from 2½ to 30 tons in both packaged units and split systems.

Salmonsen indicated that manufacturing facilities at the Bloomfield plant would continue. In addition to the Tyler and Bloomfield facilities, the department also has a plant in Trenton, N. J., where gas and oil furnaces are in full production.

Announcing the transfer of department personnel to Tyler, Salmonsen listed the following as heading up the department's five major functions: C. B. Ramsdell, manager, marketing; R. F. Hertel, manager, engineering; W. J. McCullough, manager, finance; H. W. Pierce, manager, public and employe relations; and T. Sproule, manager, manufacturing.

Appointments in the marketing section include: J. J. Heffernan, manager, advertising and sales promotion; L. H. Hirschbach, manager, sales and distribution planning; W. F. R. Karsten, manager, commercial engineering; W. A. Mulcock, manager, sales and distribution; R. D. Roley, manager, product planning; J. A. Sherman, manager, marketing administration.

There are also four regional managers; H. N. McMenimen, regional manager, eastern region; W. H. Grant, regional manager, central region; G. H. Christine, regional manager, southwestern region; P. M. Hooven, regional manager, southeastern region.

Lancaster & Means Opens in Birmingham

BIRMINGHAM, Ala. — Lancaster & Means is a new concern opening at 315 S. 20th St. here as representative for Typhoon air conditioning, Decatur Pump Co., Silvercraft cooling towers, and other lines in the heating and cooling field.

It is composed of Clyde L. Lancaster, formerly president of Lancaster Equipment Co., and Gene McMeans, formerly with Moore-Handley Hardware Co.

3 Proposed Bills Would Affect California Contractors

BAKERSFIELD, Calif. — Three proposed bills affecting all contractors were outlined at the annual convention of the California State Builders Exchange here by J. D. Mack of San Francisco, chairman of the Construction Industry Legislative Council.

These bills have been approved for support by the State Builders Exchange.

One bill would require a contractor to show his state license before he could receive a building permit.

A second would amend Section 7108 of the Business & Professions code relating to diversion of funds. The amendment would place the burden of proof on the contractor to show where funds have gone. Now the contractors state license board has the responsibility to do this.

A third bill would make bankruptcy of a contractor grounds for revocation or suspension of his state license.

Mack is executive manager of the Associated Plumbing Contractors of California.

Eugene Finn of North Coast Builders Exchange at Santa Rosa was elected president of California State Builders Exchange. He succeeds Joe Gannon of Bakersfield.

Dave Mozes Fatally Injured In Glider Crash

SPOKANE, Wash. — Dave Mozes, sales manager for General Electric Supply here, was fatally injured in a glider crash recently while participating in an air show in Spokane.

"The new PPG Glasfloss Safety-Grille filters definitely improved the service of our air filtering system," states Mr. Arthur C. Kercher. "Their one-piece chipboard construction has eliminated blow-outs and cut replacement time by 40%."

"New PPG Glasfloss® Safety-Grille* filters eliminated blow-outs, reduced replacement time by 40%"

reports Mr. Arthur C. Kercher, Air Conditioning Engineer, Joseph Horne Co., Pittsburgh, Penna.

"The new PPG Glasfloss Safety-Grille filters greatly improved our air filtering operations at Joseph Horne Co.," states Mr. Kercher.

NO BLOW-OUTS

"With the older type metal grille filters previously used, we experienced frequent blow-outs. Air is drawn through the filter bank at a high velocity; but since switching to Glasfloss Safety-Grille filters, the blow-out problem has been eliminated.

SAFER, FASTER INSTALLATION

"The new chipboard grille of the Safety-Grille filters is superior to the metal grille filters we previously used. Workmen now install the filters 40% faster than before, because there is now no danger of being cut by sharp metal edges."

LONGER SERVICE, COST SAVINGS

"The sturdy one-piece construction of the frame and grille means that we cut costs through their long usage (12 to 16 weeks) and their ease of handling."

DO YOUR AIR FILTERS GIVE YOU THIS GOOD SERVICE?

The new Glasfloss Safety-Grille filters will improve your air filtering system. They are available in a complete range of sizes. Call your local Glasfloss Distributor or PPG Warehouse for top service.

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'The Conscience of the Industry'

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They'll Do It Every Time

by Jimmy Hatlo

HI, DOC··· CASH ME THE OL' PAYCHECK AGAIN, WILLYA? GOT A FOUNTAIN PEN? I GOTTA AUTOGRAPH IT, YET····
HE'S GOT MORE NERVE THAN CUBA HAS CASTANETS····HE NEVER SPENDS A DIME IN HERE···JUST CASHES HIS CHECKS···
THE ONLY PLACE HE SPENDS HIS LOOT IS AT THE DUTCHMAN'S··· BUT HE DON'T WANT THEM TO KNOW HOW MUCH HE MAKES···
IF HE CASHED IT WHERE THEY SHOP, HE MIGHT HAVE TO PAY SOME OF THE BILLS HIS WIFE HANGS UP···
I USED TO WONDER WHERE HE GOT HIS CIGARS···BUT HE GOES TO A LOT OF WAKES!
DRUGS
BILGEWATER BEVERAGE
GREE
WATCHING THE HAIL FELLOW WHO THINKS ALL SMALL-BUSINESS PEOPLE RUN A FREE CHECK-CASHING SERVICE···
THANX AND A HAT TIP TO "ANON.", ROCKFORD, ILLINOIS.
9-26
JIMMY HATLO
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Not-So-Profound Thoughts On The Proposed ASRE-ASHAE Merger

COMING UP soon is an interesting decision. Shall the American Society of Refrigerating Engineers merge with the American Society of Heating & Air-Conditioning Engineers? Ballots will decide in December.

As is often the case, in our American-type democracy, an actual majority may not rule. Decision whether to get married, or whether not to, will be judged on a count of *those who bother to vote,* rather than on an expression-of-preference by the entire memberships of each of these two technical societies.

As we survey the situation there's considerable apathy on both sides of the fence, and the voting may be light—according to members of our editorial staff who've been attending local section meetings lately.

Apathy on the part of both Societies' membership, incidentally, may have triggered the merger proposal, they report.

Seems that only a sparse fraction of the membership regularly turns out for section meetings in some localities; is interested in society technical publications; or is willing to serve on committees, etc. (A familiar old story in *most* clubs and organizations).

Result: manufacturers who supply components to these allied industries frequently find themselves saddled with somnolent and often discouraging tasks. The latter include propping up *both* groups with subsidized memberships, "support" advertising, speakers for section meetings, taking over committee duties, etc.

Said manufacturers realize that such propping-up is a "worthy cause." Yet, some of them chafe at the costs, and begrudge the time spent on these sometimes-duplicating activities by members of their staffs who frequently are needed elsewhere more urgently.

Ergo: why not merge? From their standpoint it makes sense. Dollars-and-cents sense.

However, there's another side to this coin—as testified to by dozens of vehement, violent, and vociferous letters written to AC&RN from *individual* and *local* members of ASRE and ASHAE. These merger-protesters yelp that:

(1) They desire to preserve their identities, as (a) food preservation engineers, (b) heating specialists, or (c) air conditioning pioneers.

(2) *They enjoy the intimacy* of a relatively small organization devoted entirely and solely to their particular specialty. And they fear that the merged organization might hinder their professional advancement as young men.

(3) *They fear absorption into an amorphous "society"* whose programs they can't control, and whose membership might become so large that as individuals their personal and social interests might be lost in the shuffle.

It has been a long time since so much conflicting pressure—supersteamed pressure—has been directed toward and at the editors of AIR CONDITIONING & REFRIGERATION NEWS (from both sides) to "take a stand" on what might be, in the long run, a relatively inconsequential issue.

It appears as if we'll be damned if we do, and damned if we don't. On the one hand: manufacturer friends who see a real need for the merger. On the other: subscriber friends (employed engineers, rather than employers) who fear the consequences.

Frankly, we doubt the validity of both categorical imperatives. The vast bulk of the ASRE and ASHAE membership rosters simply doesn't give a hoot either way.

And we suspect that, if and when the merger does take place, eventually it will be just like the PTA (or any other public-spirited organization) all over again, to wit:

A hard core of the Faithful Few will attend meetings, while everybody else is out bowling or something; and only those who are pretenaturally conscientious will accept committee assignments and do the work.

If the preceding unprofound observations seem cynical to those who harbor strong emotions—pro and con—about this subject, please attribute their attitude to decades of battered-down and discouraged idealism.

Where the personal profit motive is lacking, or seems remote—as it is in this case—"democracy" sometimes fades into an idle ideal. And that's a shame, because a great deal of good could come from participation.

The NEWS hopes, for the sake of the allied air conditioning, heating, and refrigeration industries, that our preliminary soundings on this issue are confounded by a large vote—overwhelmingly one way or the other.

CHICAGO ASRE CHAPTER APPOINTS COMMITTEE TO SPEARHEAD ITS OPPOSITION TO MERGER

Howe Ice Machine Co.
Chicago, Ill.

Editor:

In scanning the October 27th issue of Refrigeration News, I noted that you had given considerable publicity to the proposed ASRE merger.

Reading the NEWS' items from various sections of ASRE throughout the country, made me think I should have mailed you some information pertaining to this matter ten days ago.

I am enclosing for your use in any way that you see fit a copy of a letter that is being mailed to the entire ASRE membership, along with a suitable proxy for the use of the member in voting.

The Special Committee, which has been chaired by the writer, and which has drafted the attached letter for mailing, has done a great deal of work to publicize our opposition to the proposed merger, and the proxy committee, who will handle the matter at the New Orleans' meeting in December, consists of the following outstanding ASRE leaders: C. F. Holske, Glenn Muffly, Donald K. Tressler, H. C. Diehl, along with the writer.

The cost of handling this mailing, as you will note from the letter, is being taken care of by a donation from individual members of our Chicago section, who are opposed to the merger, and in this way there is no expense to either the National or Local Section.

H. B. HOWE

* * *

Dear Fellow ASRE Member:
Reference: Proposed ASRE Merger

You will be interested in the following information:

At the regular October meeting of the Chicago Section held October 9th, a motion was passed which read as follows:

"I move that a Special Committee consisting of the following members (names appear at the bottom of this letter) be

(Concluded on next page)

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OFF THE CHEST

(Concluded from preceding page)

authorized to prepare a letter for mailing to the entire ASRE membership. This letter to factually set forth our objection to the proposed merger—same having the approval of our Chicago Section. The financing of this mailing will be arranged by the Committee without any obligation or expense to the Chicago Section."

Here are the facts to back up our objection to the plan:

1. You are being asked to approve a plan of merger.

2. Have you been asked if you want to merge your Society? ASRE will lose its identity. ASRE is now a healthy nationally recognized organization respected for its many achievements during its life of fifty-four years.

3. According to the Society financial statement, ASRE is in no financial difficulties.

4. "Bigness" is no assurance of excellence — quite the contrary; it is more difficult to render service to the individual member (you) in a large society.

5. Refrigeration has many other applications aside from air conditioning.

6. National meetings would be so ponderous as to be less effective to you.

7. Larger organization — too impersonal — will render poorer service.

8. Elimination of dual membership dues will effect less than 6% of combined membership. You are a member of ASRE by personal choice because it represents your area of interest.

9. We, as a Committee, believe 100% in the thinking of C. F. Holske (Former ASRE President) Page 64 — July '58 issue of R.E.

QUOTE: ASRE is a professional society — not a trade group. It has served a specialized profession and supporting industry for over fifty years. We still have not been told why the 6,000 members, who chose it in preference to other available organizations should be submerged in a combination. I do not believe that the present officers were elected for the purpose of presiding at the liquidation of ASRE by any other group.

10. If ASRE is now considered to be competitive with ASHAE, then let it remain so, for fair competition is the very back-bone of our American scheme of things.

We, as a Special Committtee of the Chicago Section, sincerely urge you in the best interests of all ASRE members—to vote "No."

ED. C. WARD
CLARENCE SIEBEN
BEN SEAMON
ARTHUR F. CHRISTENSEN
ROY A. ESPE
E. J. ROBERTSON
W. W. MORGAN
H. B. HOWE, *Chairman*

P. S. We urge you to vote "NO" on the enclosed proxy—date same and it will supersede and be counted if you have previously mailed yours.

GREAT BRITAIN EASES TRADE RESTRICTIONS

General Trade Equipment Ltd.
London W 1 England

Editor:

Today the list of American merchandise which may now be imported into Great Britain has been issued and many goods manufactured in the field covered by your publication are included. The British economy is flourishing and there is a substantial demand for American products which for nearly twenty years have not been allowed into this country.

May we ask the courtesy of your columns to introduce ourselves to manufacturers and merchants having equipment for sale to British Industry and Commerce. We are a thriving merchant organization with its tools of trade. Our merchandise ranges from simple office equipment to substantial factory machinery and plant. We are free to accept agencies or to deal simply as merchants. We are equally interested in new goods of current production, in close-out ranges and in second-hand Plant and Machinery which is mechanically sound and in good usable condition.

We publish a monthly catalogue in sections up to 64 pages each, which is distributed throughout British commerce and industry and our mailing list is in excess of 100,000 names.

We are well financed and have earned the respect of both customers and suppliers. Needless to say, we enjoy a high Dun & Bradstreet rating, and our energies are proven by our regularly expanding turnover in a growing range of merchandise.

We welcome correspondence from American manufacturers and stockholders and shall be pleased to receive their catalogues, brochures, price lists, etc. Wherever possible we would like prices quoted c.i.f. English port, but f.o.b. American port would be equally acceptable.

We feel sure that this long awaited liberalization of trade will do much to further the harmony which already exists between our countries and which is so important for the peace and prosperity of the world.

L. G. LEANSE

Trying to find the right man for a hard-to-fill vacancy—the NEWS' Classified Ads are read by your man.

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. . See for yourself why we consider the new Tecumseh Model B21U18 the best buy in a full capacity two horsepower refrigeration compressor. Here is a compressor with a measurable 24,000 BTU* capacity and with a proven efficiency of 9.25 BTU per watt! And by designing this increased capacity within the same standardized physical dimensions as other popular Tecumseh twin cylinder models, we are able to offer the B21U18 to you at a lower price than most other two horsepower compressors, all of which have less capacity. Add other features available only through Tecumseh-engineered compressors — such as our new patented anti-slugging protection — and you see why your best buy is always Tecumseh.

Tecumseh has continually provided the industry with better products, priced to your advantage, in any volume required, and within the normally tight delivery schedules demanded. We are determined to continue earning the confidence the industry has placed in us and invite your inquiries on any product problem.

* Capacity rating of the Model B21U18 based on:

300 P.S.I.G. Head Pressure
77 P.S.I.G. Suction Pressure
130°F Condensing Temperature
45°F Evaporator Temperature
95°F Return Gas
95°F Ambient
115°F Liquid Temperature Entering Expansion Valve

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CANADA: Tecumseh Products of Canada Limited, 1667 Dundas St., London, Ontario.

by C. B. Ramsdell, Manager–Marketing,

Air Conditioning Department, General Electric Company

Air Conditioning

WHAT WILL SPEED ITS GROWTH?

The boom in air conditioning is bound to come!

The reason is clear. Like the automobile, travel by air, or modern kitchen appliances, air conditioning is *progress*—a means to a better life. The American consumer will always buy progress.

Why, then, hasn't the boom arrived? Because air conditioning hasn't been *sold*. Why hasn't it been sold? Because, in the battle over *price*, the concept of *value to the customer* has been lost.

We at General Electric are not waiting any longer for air conditioning to sell itself. We believe that when the consumer is convinced that the value exceeds the price, he will be satisfied—and air conditioning will gain mass acceptance. The key, therefore, is CUSTOMER SATISFACTION.

With this in view, General Electric presents its dealer program for 1959. This program will show dealers how to assure customer satisfaction—and how to reap big profits from the coming boom in air conditioning.

Good products!

General Electric's '59 program is based on the finest, most modern air conditioning equipment that money can buy—designed, engineered and manufactured to the same high standards of quality that have made General Electric the unquestioned leader in the major appliance field. There's a General Electric unit or system for every type of residential, commercial and industrial requirement—built to assure CUSTOMER SATISFACTION.

Good application, installation, service!

An extensive *technical training course* for dealers will be a major part of General Electric's '59 program. Conducted by expert factory personnel, in strategic locations throughout the United States, it will include two semesters, home study and practical work periods. The dealer who conscientiously takes this course will be a top-flight specialist in application, installation and service. He will be ideally equipped to supply CUSTOMER SATISFACTION.

Good selling!

Realizing the importance of selling in bringing about the boom in air conditioning, G. E. is launching the *General Electric Sales College* for its dealers. Course includes the basic principles of selling—*why people buy—how people buy—how to step up your selling power—how to hire, compensate, train and supervise salesmen—and many more valuable sales lessons*. In addition, *General Electric's '59 Sight-and-Sound Product Presentation* shows dealers the most effective way to present G-E air conditioning benefits to customers. With this combination, General Electric dealers will have the finest, most complete sales-training in the industry. And they'll be selling the products that spell CUSTOMER SATISFACTION.

Get your share of the coming boom in Air Conditioning

Take the first big step now—get complete information about General Electric's CUSTOMER SATISFACTION Program for '59. See your General Electric air conditioning distributor—or mail coupon today

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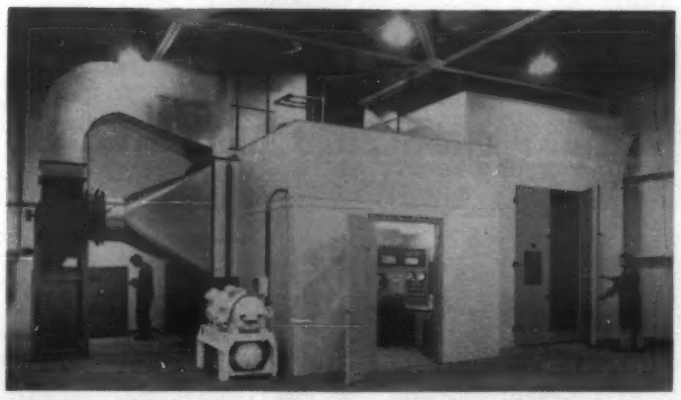
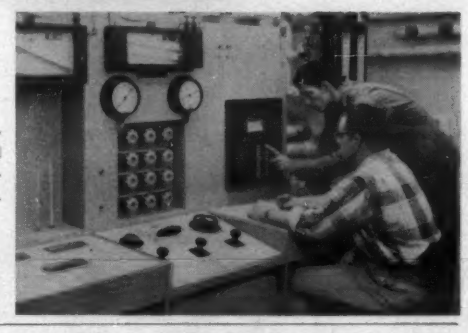


25-TON SOUND and air conditioning cell. Air handling equipment capable of delivering as much as 12,000 c.f.m. has been built into this cell. It is served by a 40-ton Bell & Gossett condensing unit.

LEFT: SOME OF 23 boiler testing stations in new National-U.S. Engineering Center.



RIGHT: PORTABLE CONSOLES with centralized recording equipment simplify compilation of test data.

$1 Million Engineering Center

National-U. S. Radiator Corp. Dedicates New Research Laboratories To Explore Promising Heating-Cooling Fields

By Frank J. Versagi

JOHNSTOWN, Pa. — "Engineering practices have been revolutionized in the last 50 years. Fifty years ago science followed practice; today, practice follows science. The engineering and research facility we are dedicating here today is one indication of that revolution."

Speaking at the dedication of the new million-dollar Engineering Center and Research Park of National-U.S. Radiator Corp., Dr. Eric A. Walker, president, Pennsylvania State university, praised the forethought and ideals which made such a facility possible.

"This new building gives us the flexibility we need to develop and evaluate new designs in heating and air conditioning equipment, as well as to explore such new and promising fields as heat pumps, solar, and electric heating," declared T. B. Focke, corporation president.

In the new building, research, manufacturing, and sales executive offices are separated from laboratory areas by corridors designed to allow for future expansion.

Of the 17,000 sq. ft. devoted to laboratories, 12,000 sq. ft. is high, unobstructed space where 100-ft. roof trusses 18 ft. above the floor will make it possible to contain test facilities larger than anything now available in the industry, the company claims.

Initial installation of testing equipment includes a 25-ton sound and air conditioning test cell which is equipped with a 40-ton Bell & Gossett condensing unit and air handling equipment capable of delivering as much as 12,000 c.f.m.

This test cell, and two smaller air conditioning test cells have been equipped with quick-connect couplings which permit a complete change of equipment in the test stand in as little as half an hour.

On the heating end, there are 23 boiler testing stations, seven for large industrial and commercial units and 16 for residential and small commercial boilers.

Each of these stations is supplied with all necessary services, including natural and bottled gas, city water, two grades of fuel oil, compressed air, single and three-phase electrical power, cooling water, and exhaust facilities.

Portable consoles used by laboratory technicians during boiler tests were especially designed with centralized recording equipment which will simplify compilation of test data.

Heating and cooling requirements of the new engineering center have been met by a hydronics system which utilizes a National-U.S. Series 66 gas-fired water boiler with a rated capacity of 2,484,000 B.t.u./hr. and a 75-hp. packaged water chiller with water-cooled condenser. An external weather thermostat controls operation of the boiler and chiller and thermostats in the individual zones control operation of individual fan coil units in respective office areas.

Louis N. Hunter, senior vice president for engineering and research, pointed out that the revolution in engineering mentioned by Dr. Walker goes hand in hand with the increasing complexity of technology.

"In our industry, we have perhaps not had the spectacular breakthroughs which capture the public's imagination," Hunter said, "but history shows that the world's buying power has been in colder areas.

"Is it not conceivable that proper cooling facilities in the world's hot areas can release latent energies and abilities to such a degree as to be directly responsible for raising the world's standard of living?

"Information like that which will be developed in this new laboratory can help speed such a day along," he concluded.

In his formal address at the dedication luncheon, Penn State President Walker emphasized that, as impressive as the building is, it is justly to be considered a tool in the hands of *people.*

"It will always be people who determine the final effectiveness of any machine, any laboratory," he stated.

"In this regard, it is perhaps unfortunate to report that engineering education at the college level is plodding along as if no engineering revolution ever took place."

Walker outlined briefly three programs — technical institute level, baccalaureate, and doctoral—each of which should be treated separately. He disagrees with the present practice of treating post-graduate work as a supplement to a bachelor's program which is considered terminal in itself.

The dedication ceremonies were attended by almost 100 persons from the heating and cooling industry, as well as many Johnstown area businesspeople and civic leaders.

How to balance air conditioning, heating and ventilating systems with the **NEW**

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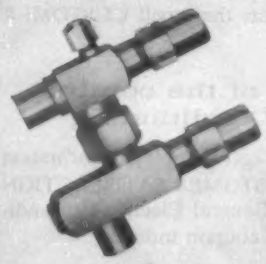

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TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

Air Conditioning Vs. Refrigeration

"Storybook engineers, playing it safe, frequently over-engineer the air conditioning system in a supermarket. They get the dewpoint within ½° of dry bulb, and we get condensation problems all over the store."

So charges one commercial manufacturer's representative in discussing the interrelationship between air conditioning and ventilating a store, on one hand, and efficient operation of refrigerated display cases on the other.

This interrelationship is complicated by the many people involved in deciding what results are desired. For example, the architect's concept of duct layout may conflict with fixture placement; the meat manager's and dairy manager's ideas of merchandising display will affect case operation; the employe's and customers' desires for comfort in several areas of the country will result in diverse operating conditions of the air conditioning—resulting, in many cases, in erratic operation of some of the display cases.

High Relative Humidity Excessive Air Movement

Harmful effects on refrigerated display cases come from two sources—high relative humidities and excessive air movement.

According to Art Perez, chief administrative engineer, Tyler Refrigeration Corp., high relative humidities are becoming common in supermarkets. "Unfortunately," he adds, " relative humidities of over 50% tend to aggravate frost problems on display cases."

Neal Schumacher, quality control manager, C. V. Hill & Co., Inc., adds that prolonged high relative humidities will often cause frost-up of air flues as well as evaporators in the cases.

'Swamp Coolers' Can Cause Difficulty

In the Southwest, it is not unusual for supermarkets to be cooled with "swamp coolers"—evaporative coolers. Not only do such coolers raise the relative humidity greatly, but they require great quantities of air to operate effectively, and such air movement can cause difficulty even if relative humidity is not high.

"Modern self-service cases with wide open tops cannot tolerate the constant movement of air over the case," states D. L. Taft, general service manager, McCray Refrigerator Co., Inc. "If, for any reason, it is impractical to avoid such air movement over the cases, the only alternative is to install plastic sliding lids.

"This, of course, will lower the merchandising value of the fixture," Taft recognizes, "but in some cases it is the only way to make the equipment work—regardless of make."

Drafts from any source, even if humidity is controlled, will cause difficulties. Open doors and windows, exhaust fans, improperly placed registers have all been guilty of causing malfunction of refrigerated display cases, although nothing was wrong with the cases, as such.

One example: a single meat case in a store would hold temperatures during the day, but when the store opened in the morning, product temperature was always abnormally high. Refrigeration characteristics of the case were all right; incoming air was about 28° F.; temperature spread across the case was about 6°.

The answer: a ceiling ventilating fan mounted directly above this one fixture was turned on every night to clear out the store air. This exhaust fan literally pulled refrigerated air out of the display case. While the mechanical components of the case did their job, and the evaporator temperature was correct, constant removal of the refrigerated air during the night resulted in excessive product temperature.

Condensation Problem

Sometimes, it is the lack of air circulation which causes trouble—in most cases condensation. Common location for such condensation is between rows of refrigerated cases mounted back to back. Another place—the ends of refrigerated display cases where magazine or phonograph record racks are backed against the end.

Here a little forced circulation, a simple fan, can solve the problem in most cases.

Air conditioning systems, of course, can be responsible for both humidity and air movement problems in refrigerated display cases. One manufacturer reports a new supermarket which was having difficulty with condensation throughout the entire store. Investigation showed the air conditioning system to be so oversized that they were able to cut capacity in half.

The condensation problem cleared up within three hours.

Relative humidity around 50%; air conditioner coil temperatures under 50°—better yet, under 45°; terminal air velocities about 50 f.p.m.—never more than 100 f.p.m. These are considered optimum conditions for the cooling system if it is not to interfere with the refrigerated fixtures.

But there are those times when the display cases must live with whatever ambient conditions exist. Again in the Southwest it is common to have supermarkets equipped with swamp coolers. In such cases, it may be necessary to add more defrost heat and more frequent defrost cycles. The additional heat allows shorter defrost times which can be used more frequently without hurting the product.

"Low wattage heaters can be applied to the air flues to keep them open," adds Schumacher of C. V. Hill.

From all this it is obvious that a good supermarket installation considers the interrelationship between air conditioning and display cases, so that the department managers will realize full refrigeration efficiency and maximum impulse buying from modern cases.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John I. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

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GM STEEL TUBING BY ROCHESTER PRODUCTS

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Peerless Offers Horizontal Split Pumps

A complete line of horizontal split case pumps for hot and cold water handling, designated as the "AquaLine," has been introduced by Peerless Pump Div., Food Machinery & Chemical Corp., Dept. AC&RN, 2005 Northwestern Ave., Indianapolis 8, Ind.

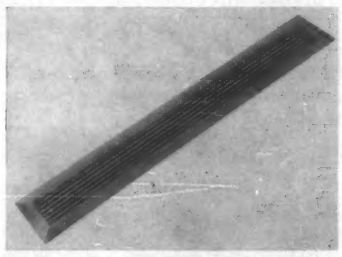
These pumps are available in shaft sealed types in 1½ to 4-in. discharge sizes and in packing gland types in 4 to 8-in. discharge sizes.

Capacity and head ranges of the packing gland types are up to 2,600 g.p.m. and up to 280 ft., respectively, and capacity and head ranges of the shaft sealed types are up to 950 g.p.m. and up to 350 ft., respectively.

Liquid temperature limits for the shaft sealed types is 180° F. and for the packing gland types is 250° F. Motor sizes range from 1 to 75 hp.

Waterloo Grilles Available In 12-Ft. Lengths

A new line of all-aluminum extruded "Airline Grilles," designed to match a wide range of architectural finishes, has been developed by Waterloo Register Co., Inc., Dept. AC&RN, P. O. Box 72, Waterloo, Iowa.



The grilles, which are available in one-piece continuous construction up to 12 ft. in length, have been designed for use in many locations, including floor, sill, and wall applications.

Design features include a unique bar-support method that makes it practically tamper-proof, according to the company. This method involves integral construction of bars and supports incorporating the use of aluminum rods that tie the grille work securely to the frame, it was pointed out.

The new grilles are available in eight different types.

35-Cu. Ft. Wall Case Occupies Only 10 Sq. Ft.

A new 35-cu. ft., sliding glass door refrigerated wall case which occupies "only 10 sq. ft. of floor space" has been introduced by the Aug. G. Barkow Mfg. Co., Inc., Dept. AC&RN, 2230 S. 43rd St., Milwaukee 46, Wis.

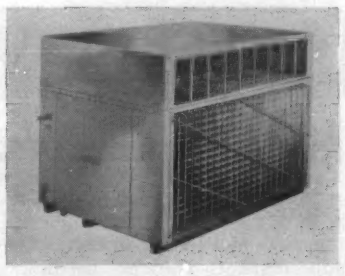
Among listed features of model W-500 are two fluorescent lights, one on each side; full-view "Thermoglass" sliding doors; and four adjustable zinc-plated shelves.

'J-Foam' Features Extra Low Conductivity

"J-foam" expanded polystrene insulation, described as a new product for insulating cold storage rooms and marine applications where buoyancy is required and for other installations where extreme lightness is a factor has been announced recently by Johns-Manville Sales Corp., Dept. ACRN, 22 E. 40th St., New York 16, N. Y.

J-foam is claimed to feature extra low conductivity ("thermal conductivity is only .23 at 10° F.; .25 at 40° F.; and .27 at 70° F.); lightness ("a cubic foot of J-foam weighs only 1 lb."); easy installation; large size sheets; and strength and resilience.

Also the company said, J-foam is completely inert and moisture resistant ("it has no capillarity, is non hygroscopic, and its moisture permeability average is 1.5 perm inches").



Lennox 4-Ton Unit Is For 'In-Between' Jobs

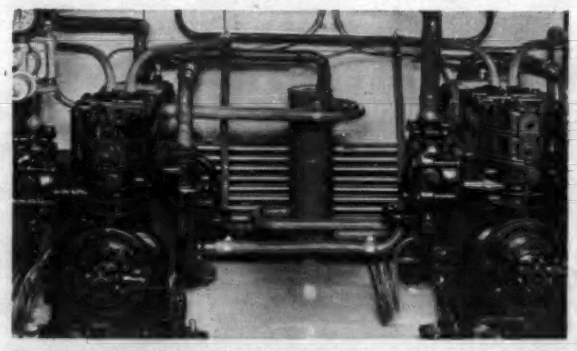
A new 4-ton condensing unit for central residential air conditioning systems has been added to the line of Lennox Industries Inc., Dept. AC&RN, Marshalltown, Iowa.

The unit, created especially for "in-between sized" installations, gives 49,000 B.t.u.h. of cooling when remotely connected with or close-coupled to a 3-ton "Landmark" evaporator and 51,000 B.t.u.h. with a 5-ton evaporator, according to the manufacturer.

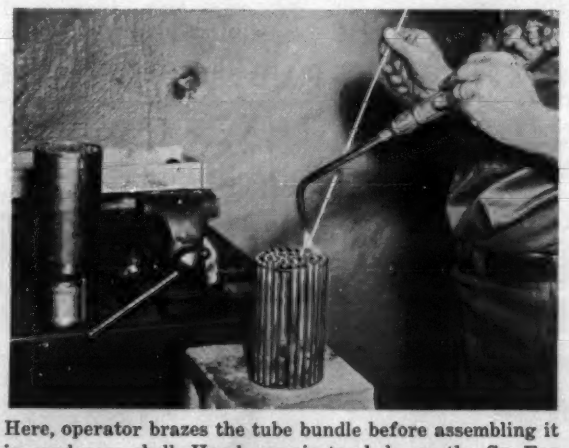
"Having all the design features of the previously introduced 3-ton and 5-ton condensing units, the HSA3-40, 4-ton model, when installed with acoustical discharge hood, ejects air high and upward on the same side that it enters.

"Consequently, the condenser may be tucked in a corner or even built into a wall so that only the inlet-outlet space is exposed. It can be almost hidden by planting of shrubbery. Without the acoustical hood, air is discharged from the top of the unit."

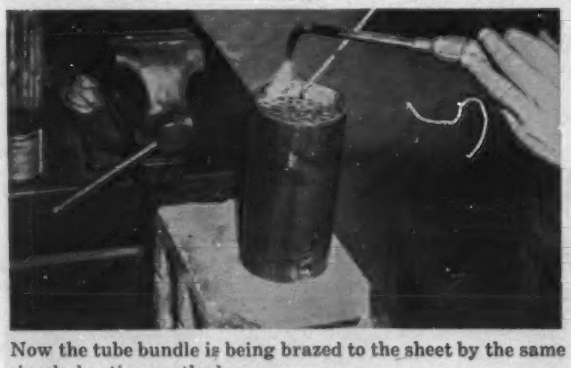
Dimensions of the 4-ton unit with acoustical hood are 34½ in. in height, 33 11/16 in. in depth, 59⅛ in. in width.



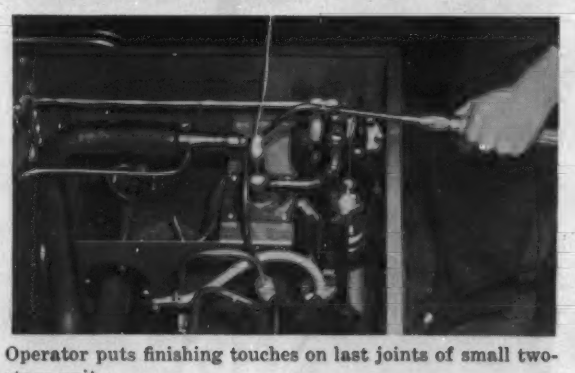
Here is a cascade refrigeration system using Freon 22 and Ethane refrigerant. This system cools five gallons of oil per minute to minus 70° F. All of the refrigerator tubing on both high- and low-pressure sides is brazed with SIL-FOS (approximately 185 joints). Some joints fluctuate in temperature from minus 200° F to plus 70 or 80° F.



Here, operator brazes the tube bundle before assembling it in condenser shell. Hand gas-air torch keeps the SIL-FOS flowing freely.



Now the tube bundle is being brazed to the sheet by the same simple heating method.



Operator puts finishing touches on last joints of small two-stage unit.

20 Years Without A Joint Failure . . . Harris Refrigeration Sets This Record With SIL-FOS

This 20 year failure-free record is even more remarkable since the joints of Harris equipment are subjected to extreme temperature, pressure and thermal shock far in excess of an ordinary refrigerator.

A pioneer in the design and manufacture of low-temperature refrigeration equipment for science and industry, Harris Refrigeration Company, Cambridge, Massachusetts, finds Handy & Harman SIL-FOS the brazing alloy that meets all its stringent requirements for high strength, leak-tightness and durability. Specified for 20 years in the production of Harris units ranging from small refrigerators for cold-treating ball bearings to a giant big enough to chill a 20-foot, 10-ton mill roll, SIL-FOS has always assured highest quality joints while providing the production flexibility and economy essential to efficient manufacturing.

Time, strength and leak-tightness are, by themselves, excellent reasons for specifying SIL-FOS. There are many more. Like brazing's inherent economy. Like the ease and speed with which joints are made. And like the quality SIL-FOS joints assure your product. We would like to give you all the necessary brazing background you may require . . . call us.

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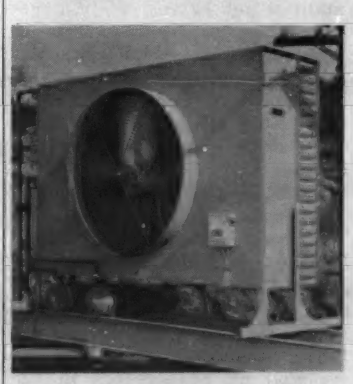
Halstead & Mitchell Expands 'Type AC' Line

Expansion of its "Type AC" line of air-cooled condensers with six new models providing capacities of 30 through 100 tons has been announced by Halstead & Mitchell, Dept. AC&RN, Bessemer Bldg., Pittsburgh 22, Pa.

"Higher capacities of the expanded line lowers initial costs for the user in large tonnage installations, and allows simplified piping installations in the field when units are used with multiple condensing units," it was claimed.

Produced in basic units of 30, 40, and 50 tons, the new condensers also are offered as twin units providing 60, 80, and 100-ton capacities. Necessary manifolding is provided for inter-connecting the twin units at the job site.

H&M's expanded Type AC line now consists of 18 propeller fan models ranging from 3 through 100 tons' nominal capacity, covering a wide range of suction, condensing, and entering air temperatures, the company said.



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Only 25¢ each.

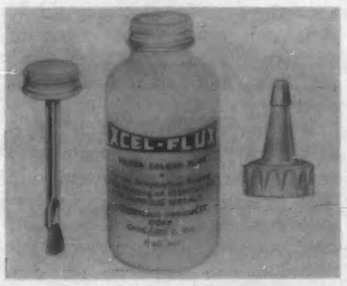
FOR MORE INFORMATION ON THE PRODUCTS DESCRIBED ON THIS PAGE
Write Directly to the Company—*at the Address Given in the News Item*

Nesbitt Introduces Gas Unit Heater Line

A new line of gas-fired unit heaters, known as "Series K," has been introduced by John J. Nesbitt, Inc., Dept. AC&RN, State Rd. & Rhawn St., Philadelphia 36, Pa.

The smallest of the line, the K-25-F, is particularly designed for relatively small spaces, the company said. This model is especially useful in areas where standby heating is needed in addition to the central system, it was stated.

Announced heating capacity of the units in the Series K line, which includes ten models, ranges from 25,000 to 250,000 B.t.u. per hour input. The units range from 66 lbs. to 310 lbs. in weight and from 18 in. to 36 in. in height. All of the heaters are universally approved for all types of gases, it was noted.



Xcel-Flux Available In Plastic Squeeze Bottle

"Xcel-flux" is now being offered in a new plastic squeeze-type bottle by American Products Corp., Dept. AC&RN, 525 South Dearborn St., Chicago 5.

Xcel-flux is used with low temperature alloys for brazing ferrous and non-ferrous metals and alloys. A permanent applicator brush in cap speeds application of flux to metal. The flux, in semi-liquid form, can be brushed evenly, quickly, and "stays put," the company said.

Paragon Announces Heavy-Duty Time Switch

A Paragon "2100 Series" heavy-duty time switch for control of substantial loads, "even under severe operating conditions," has been announced by Paragon Electric Co., Dept. AC&RN, Two Rivers, Wis.

Optional features include an omitting device with a seven-day dial for eliminating the "On" operation on selected days. Dials are available with four trippers for two "On" and "Off" operations daily.

The minimum "On" period is ½ hour and the maximum "On" period, 23¼ hours.

Switch Rating: 55 amperes at 120/240 volts a.c. Plunger action, copper-to-copper contacts are mounted integrally with pressure-type copper wiring terminals. Manual switching is possible without interfering with automatic operation.

The switches are equipped with synchronous, self-starting motors with a motor current consumption of 3 watts. The motors will maintain synchronous speed at temperatures from -20° F. to 150° F., according to Paragon. Standard motor is used with 110/125 volt, 60 cycle current with neutral tap for three-wire, 240-volt circuits, it is explained.

Filter-Drier Is Smaller Than a Golf Ball

A new midget size TMC filter-drier for use on systems up to ¾-ton capacity is announced by Tube Manifold Corp., Dept. ACRN, North Tonawanda, N. Y.

This filter-drier "is smaller than a golf ball, and makes it possible to have the protection of TMC Molecular Sieve filter-driers on small systems where space is at a premium," it was pointed out.

The body measures 1⅝ in. in diameter by 1⅝ in. long.

Linde Offers Books with Starter Welding Set

A new "Purox W-200" starter set was introduced by Linde Co., Div. of Union Carbide Corp., Dept. AC&RN, 30 East 42nd St., New York City 17.

A free premium of 17 "How-To-Do-It" welding booklets will be awarded to purchasers of this outfit during the remainder of the year, the company said.

The starter set includes a Purox W-200 blowpipe with one welding head, a CW-200 cutting attachment and a cutting nozzle, two "Prest-O-Lite" regulators, "Oxweld" hose, goggles, and friction lighter. An enameled steel carrying case is furnished with the outfit. The set lists for $99.

Soft Drink Dispenser Designed for Home Use

"Luxury wrinkle" for home recreation room bars is a miniature soft drink dispenser designed by Carbonic Dispenser, Inc., Dept. AC&RN, Herbert Rd., Canfield, Ohio.

The unit, called the "Sodamaster Mix-et" and bearing a price tag of $795, f.o.b., Canfield, is a self-contained carbonating syrup and refrigeration system—all in a single cabinet. It is equipped with Carbonic Dispenser's "Mix-Monitor" faucet which can be used to dispense three carbonated beverages.

Dimensions of the Mix-et are: 31⅝ in. wide; 22¼ in. deep, and 13¾ in. high.

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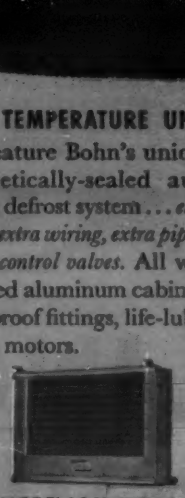
LOW TEMPERATURE UNITS
All feature Bohn's unique, hermetically-sealed automatic defrost system . . . *eliminates extra wiring, extra piping, costly control valves.* All with grained aluminum cabinets, rust-proof fittings, life-lubricated motors.



MODEL LC Unit Cooler
For large walk-ins. 6000 to 24,000 BTU/hr. cap. at 10° T. D.

MODEL LM Mullion Lo-Temp
For upright freezers. 1400 and 1900 BTU/hr. cap. at 10° T. D.

MODEL LR Unit Cooler
For reach-ins and small walk-ins. 1000 to 1900 BTU/hr. cap. at 10° T. D.

STANDARD COOLER UNITS
Compact units, all with practical built-in Bohn features, rust-proof fittings and life-lubricated motors, housed in long-life, grained aluminum cabinets. Simple to install, fully tested and warranted.

MODEL HR Half Round
For walk-in coolers. 2600 to 10,800 BTU/hr. capacity at 10° T. D.

MODEL C
For reach-ins. 1000 to 3000 BTU/hr. capacity at 10° T. D.

MODEL UC Unit Cooler
For walk-in coolers. 2600 to 20,000 BTU/hr. capacity at 10° T. D.

MODEL U
For small applications. 850 to 1500 BTU/hr. capacity at 10° T. D.

MODEL UM Mullion Unit
For reach-ins and dough retarders. 1300 to 2300 BTU/hr. capacity at 10° T. D.

MODEL D
For beverage boxes and back bars. 1300 to 2300 BTU/hr. capacity at 10° T. D.

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Aluminum and Brass Corporation
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Large Air-Cooled Condensers (1)

Controls for Winter Have Led To Wider Use, Says D. E. Kramer, In Outlining Advantages and Problems Involved In Their Use

MINNEAPOLIS — Large air-cooled condensers are finding increased acceptance because they avoid many problems inherent in wet condensing and because controls have been developed which make winter operation of air-cooled condensers quite practical, although there are problems which must be considered with air-cooled equipment, declared D. E. Kramer, engineer, Kramer Trenton Co., in a talk before the 54th annual meeting of American Society of Refrigerating Engineers.

The problems, according to Kramer, are:

Inadequate flow through expansion device when receiver pressure is sharply reduced;

Unreliable compressor starting in low outdoor temperatures when the actuating device is a low side pressure switch;

Excessive compressor cycling on startup;

Prolonged or incomplete defrost time in low temperature systems with hot gas defrost;

Uncertain defrost termination where defrost period is cut off by rise in evaporator pressure.

As general solutions, Kramer offered that the first problem is solved by capacity reduction of the condenser to provide normal receiver pressures at any ambient.

Other four problems are handled by finding some means to isolate the condenser from the rest of the system during the compressor off-cycle and during hot gas defrost.

"Airflow reduction for reducing condenser capacity can be achieved by fan control or by shutters," Kramer explained. "Fan control generally involves the use of a close-on-rise pressure switch actuated by discharge pressure; the switch stops the fan when high side pressure falls below cut-out setting.

"More positive airflow control may be obtained with shutters," he maintained.

To back up his preference, Kramer asserted that a rise-to-close pressure switch may cycle a condenser fan as many as 40 times an hour. The effect of such excessive cycling on service life and maintenance is obvious.

Further, the on-and-off operation of the condenser fan causes sharp fluctuations in high side pressures—leading to formation of flash gas in liquid line and receiver with a resultant reduction in capacity of the expansion device.

Then there is the possibility that a strong breeze blowing directly against the condenser coil will cancel any advantages gained by stopping the condenser fan.

"A basically sounder approach," according to Kramer, is the use of shutters to adjust airflow positively. While oversized motors must be used with propeller fans to accommodate increased static pressures caused by partially closed shutters, and while damper controls are subject to mechanical and electrical failures, shutters still can provide "reasonably stable" condenser capacity control, Kramer insists.

He then discussed and illustrated typical setups making use of fan and shutter airflow control.

Reducing Internal Condensing Surface

"Capacity can be controlled without regard to airflow over the condenser," Kramer continued. "One basic way is by reducing the internal condensing surface."

One method is to control refrigerant flow through multiple condensers. As an example, a condenser comprised of five units with a solenoid valve controlling refrigerant flow to four of the five; each valve is subject to discharge pressure and set to close sequentially.

"As each solenoid closes, the associated condenser fills with liquid and the pressure drop in the remaining units increases."

Another method of flooding condenser tubes is by heating the liquid leaving the condenser —either by hot gas or electrically. The pressure of the warmed liquid prevents further liquid from leaving the condenser until its tubes are flooded to the extent necessary to increase condensing pressure to a value corresponding to the temperature of the warmed liquid at the heater.

(To Be Continued)

Ranco Appoints R. G. Raney as Marketing Manager

COLUMBUS, Ohio—Appointment of Robert G. Raney as marketing manager has been announced by J. H. Manecke, general sales manager of Ranco Inc.

R. G. Raney

Raney's responsibilities in his new position include introduction of new products, promotion of existing products or their modifications for new applications, and surveys of potential markets for all Ranco products.

From 1955 to his present appointment, Raney was vice president of Qualitrol Corp., East Rochester, N. Y.

From 1944-45, Raney performed liaison duties between Ranco and aircraft manufacturers. During the latter part of the period, he was a Ranco service engineer working primarily with major refrigeration equipment manufacturers on temperature and pressure control problems.

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LONG EXPERIENCE – For years Chase has been rolling aluminum for special applications, along with other metals, giving Chase unrivalled non-ferrous metals experience...82 years working with metals!

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HUGE STOCKS of semi-finished aluminum at Chase Cleveland and Waterbury mills assure you quick delivery of coiled sheet to meet your exact needs.

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Report on Education

Another article in a series dealing with all levels of education and training in the air conditioning and refrigeration industry.

By Frank J. Versagi, Technical Editor

8. Miscellaneous Schools

Here and there, usually at the high school level, adult education courses are offered in air conditioning and refrigeration. Such courses are usually a semester of classroom study on the basic refrigeration cycle, perhaps a little psychrometry, and air handling. They are designed for those who have a superficial interest in the subject, rather than those who intend to go into service or actually in the trade.

The actual make-up of one such class was housewives and husbands who wanted to know what makes their refrigerator or window unit work; salesmen selling window units or freezers who never saw the inside of either; youngsters thinking they might like to tinker around with an old compressor; a couple men doing service work, but who had never studied the cycle —just picked up the mechanics of servicing as they went along.

These courses are relatively inexpensive—on the order of $5 or $10, but nothing more than a quick look at refrigeration and air conditioning theory is claimed for them.

'Licensing Schools'

One other type of school must be mentioned before we begin discussion of over-all subject matter and teaching techniques. For want of a better name, we will call it a "licensing school."

In those areas where licensing requirements are in effect, the applicant must pass an examination in addition to meeting experience requirement for the specific license level he is seeking.

More and more now, for example, plumbing and heating people who are getting into air conditioning must have licenses to do the work. (In some cases, the license is actually a journeyman type license—allowing the *individual* to do specific work; in other cases it is a contractor's license allowing anyone in his employ to do the work.)

To prepare people for the licensing examination, contractors or dealers get together with several industry manufacturers and hold a school. The contractors supply a coordinator or teacher for the entire course, while the manufacturers supply equipment and instructors for specific portions of the course, such as controls, pumps, or motors.

The course is aimed specifically at preparing the students to pass the licensing examination, so that teaching and learning tends to be in bits and pieces, rather than an integrated whole. Sample licensing exams are given the men so they will know what types of questions are asked.

Some such courses have earned local reputations for turning out a high percentage of those who pass the exams each year.

On the other hand, they are criticized for turning out "minimum mechanics" who will "undoubtedly forget all they know as soon as they have finished the exam."

These courses are nominal in cost and everyone from small town appliance dealers to servicemen for nationally known chain stores attend them.

Students are taught enough to answer such typical questions as:

What is latent heat?

Define refrigeration. What is the most common refrigerant?

Make a rough sketch showing a water cooled mechanical air conditioning system; designate the high and low sides; using R-12, show approximate high side pressures and low side pressures. Show water inlet and outlet temperatures.

Give the limitations of melting point of solders or alloys permissible in systems containing refrigerant gas; be sure to relate to type of building occupancy.

How much air flow across the evaporator is normally required per ton of cooling?

What is the difference between a fusible plug and a pressure relief device?

* * *

9. What and How Schools Teach

All schools, from engineering colleges to trade schools and manufacturers' schools have in common several things. Such things as most effective size of classes, best teaching techniques, types of tests, actual subject matter to be included under a given outline — all schools must formulate policies on such matters for the group at which they are aiming.

Most, but not all, of the discussion which follows will have to do with education below the college level—the reason being that colleges and universities have fairly rigidly established programs and teaching techniques by comparison to trade schools and manufacturers' schools.

Several times we have mentioned the disagreement over just what subjects should be included in an educational program at specific levels. In company schools and trade schools we are not so much talking about the inclusion or exclusion of humanities as we are about how much theory to include and how deep to go into specific practical subjects.

Let's take an example: most manufacturers' schools in basic refrigeration discuss the several types of compressors to some degree. Frigidaire courses in household refrigeration, for example, contain a thorough discussion of compressor types accompanied by large colored drawings showing operation and flow of gas.

Cutaway Models Used

Cutaway models of rotary and reciprocating compressors are used to demonstrate actual operation.

Some schools have plastic or glass covered compressors actually operating under load, but with a mixture of refrigerants which give safe and lower pressures.

Lectures before and after use of the training aid introduce then tie up the student's understanding of its operation.

Other schools, on the same subject, will rapidly skim through the operation of the several types of compressors or just through the one which that particular manufacturer uses. In these cases, the instruction is chiefly centered on getting a wrench in the man's hand so that he can learn how to work with a specific type of compressor.

Another example: the use of refrigerant pressure/temperature tables. The theory portion of the service class at American Blower ties in the use of the tables with a thorough discussion of evaporation, vapor pressure, equilibrium. Other schools hand the students the charts or gadgets turned out by several manufacturers and content themselves with teaching the student to read the chart.

"Engineers might have to know just why pressures and temperatures are related," one instructor tells his class, "but for practical purposes, all you have to know is that the chart tells you what pressure to expect at a given temperature, and vice versa."

Another example: In teaching troubleshooting on air conditioners, some schools place heavy emphasis on use of a guide or directory of some sort. This is the type of thing that tells you to look for several specific things if such and such is wrong.

Disputing this approach, many instructors refuse to use or recommend such guides, and try instead to teach diagnosis by logic.

Janitrol falls between these two extremes. They have an extremely effective troubleshooting guide which they call a "Road Map." In their classes, however, they insist that servicemen sit and think, rather than hunt and peck with the map as a guide.

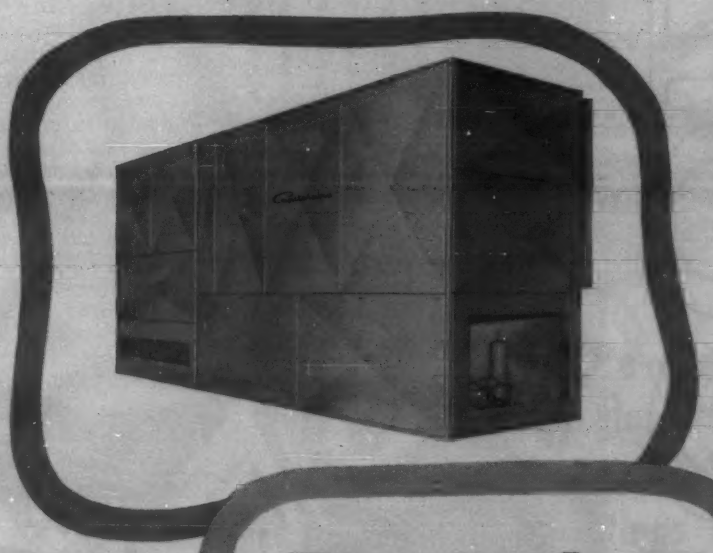
(To Be Continued)

For Unmatched Flexibility

National-U.S.

Central Station

Packaged Air Conditioning



7½-60 h.p.

water-cooled
or
evaporative condenser

Water-cooled or evaporative condenser models in nine sizes from 7½ to 60 h.p. provide a selection from which a combination can be arranged to fit any particular situation. Each model is available in different arrangements, matched to meet any space requirements.

All units are completely engineered and packaged—require only power, ductwork and water supply connections for quick installation. And, all are factory pre-tested to minimize performance testing time.

Write today for Form AC-1001 describing the new Capitolaire Central Station *Packaged* Air Conditioning System, or contact your nearest National-U.S. representative. He'll be glad to help you.

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Johnstown, Pennsylvania
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58-21
Sixty years in thermal hydronics

'Room of Tomorrow Conditioner'

VOLUME of fresh air, exhaust, air direction, temperature, and humidity are all controlled by this young lady from her chair in the "Room of Tomorrow" exhibited at the National Hotel Exposition held in New York City recently.

Arm Chair Weather Control Seen as Not Too Far Off for Hotels, Homes

NEW YORK CITY—Weather control from your armchair will be a feature of homes and hotel rooms of the not-too-distant future, according to Whirlpool Corp.

The "Room of Tomorrow," exhibited recently at the National Hotel Exposition here, featured this "RCA Whirlpool" room air conditioner, mounted high on the wall, which can be controlled from anywhere in the room.

On the small control panel are dials to control amounts and volume of fresh air introduced into the room, exhaust, air direction, temperature, and humidity.

In addition, a button controls lighting on both the panel and the air conditioner. The light on the grille of the wall unit functions as a softly glowing night light.

A thermostat located in the control panel provides temperature changes as desired—either heating or cooling.

The Room of Tomorrow remote-controlled RCA Whirlpool air conditioner is expected to be available by 1960, the company said.

The Room of Tomorrow, which was designed by Henry End to show hotel and motel operators how to take advantage of new developments in the design and application of materials and techniques, also featured an RCA Whirlpool automatic ice cube maker and "Wonderbar" refrigerator, it was explained.

California Court Decision Threatens Permit Structure

LOS ANGELES—A decision by the California Supreme Court that threatens the whole structure of building permits issued by cities and counties in the state takes effect Nov. 17 unless an appeal has been filed by that date.

The court decided, in the case of Agnew vs. the City of Los Angeles, that the city's requirement for permits before installation of wiring is in conflict with the state contractors license law and is therefore illegal.

Henry B. Ely, executive secretary of the Refrigeration & Air Conditioning Contractors Association of Southern California, Inc., said that he had been advised that the city of Los Angeles will ask for a rehearing of this case. It is possible that the Supreme Court may reconsider its position, he added.

In its decision issued Oct. 17, the court held that Agnew, a specialty contractor with a basic C-10 state electrical contractor's license, had the right to perform the work covered by his license anywhere in California.

City and county government requirements that he must be issue a permit before proceeding are in conflict with the right granted him by the state and are therefore illegal, the court said.

Many cities and 27 counties in California have building codes that require such permits.

Agnew, described by Ely as a "perennial litigant," previously won a case against the city of Culver City, establishing the point that only the state has the right to examine and qualify contractors in California. The right of cities to charge license fees for revenue purposes only was maintained, however.

In another action, Agnew knocked out ordinances requiring contractors to post bonds before they get building permits.

Presumably, the court's decision would apply to all other contractor licenses issued by the state contractors board, including those for refrigeration; air conditioning, warm air heating, and ventilating; plumbing and heating; boiler, hot water heating, and steam fitting; insulation; and sheet metal.

Since the court's decision, the San Francisco Dept. of Public Works has asked the city attorney for an opinion on the question:

"May the City and County of San Francisco regularly continue to license journeymen plumbers as provided for in the San Francisco Gas and Appliance Code?"

One industry source interpreted the court's decision this way: "Permit laws, per se, are not out—in the State of California. But laws, ordinances, or regulations that require an examination or qualification as a condition to obtain permits to do work, under which a contractor is already authorized under his state license, are out.

RECOLD

Engineering the temperature...
AROUND THE WORLD...

Bangkok, Thailand. In oppressive heat and sweltering humidity the luxurious Erawan Hotel is completely cooled by Recold air conditioning equipment. Horizontal and vertical air handling units cool the public rooms. Small RE room units, individually controlled, cool and dehumidify each of the 206 apartments and bedrooms.

RECOLD **CORPORATION**
7250 East Slauson Avenue, Los Angeles 22, California

Heating & Air Conditioning Exposition--

(Concluded from Page 1)

answer to electronic air cleaner washing problems. It will be featured in equipment employing a patented ionizer, selenium rectifiers, and a single balasted self-adjusting circuit.

A line of four new aerosol filters will be introduced by a company specializing in safety appliances. They are planned to cover the entire spectrum of particle removal efficiencies.

Another exhibit will feature the use of activated charcoal in air purification, displaying for the first time at a trade show a new wall unit. This is a flush-mounted cabinet containing dust filter, charcoal deodorizer, and air circulating fan.

Moisture Control

Other displays will feature moisture control devices.

One humidifier includes a water tank with level control and heating element, a blower, and a humidistat. The additional moisture required for air that is too dry is procured by blowing air over the surface of the warm water. Operation is completely automatic, and a damper closes off the unit when not in use, to prevent gravity circulation of moist air beyond requirement.

Another type of humidifier, also offered in portable or duct models, employs fiber glass evaporator plates, and is designed to evaporate up to 12 gals. of water a day.

Representing the reverse function to that of the humidifier, a dehumidifier will be shown whose purpose is to dry excessively moist air in enclosed spaces. This free standing and portable unit is provided with a built-in humidistat which starts and stops the compressor unit and air circulating fan. It is designed to keep the air dry in a closed space up to 10,000 cu. ft., and will condense out of the air up to 3 gals. of water in 24 hours.

Air moving equipment will provide an important group of displays. A "significant technical development" in this field is a centrifugal fan which has backward-curved hollow blades of air-foil contour. This design is said to make for more efficient performance and quieter operation, as well as assuring a wide range of economical operation.

Another line will include low and high pressure propeller fans, tubeaxial fans, air blasters, centrifugal exhausters, centrifugal ventilators, penthouse and axial ventilators, as well as utility blowers.

In the same field will be a line of air conditioning blowers, furnace blowers, blower-filter units, window fans, attic fans, and exhaust fans.

Several displays will present equipment for exhausting air, such as roof fans and blowers, and in one instance, a glass fiber skylight which can be used as a gravity exhauster.

Many types of heating and cooling systems, as well as year-round air conditioners and heat pumps are offered with complete equipment, such as burners, condensers, blowers, motors, and controls, but the exposition also affords a comprehensive review of these and other components created by specialists.

Motors

Electric motors will bracket a significant section of the exposition roster. One exhibitor specializes in a complete line of very small shaded pole motors, ranging from 1/500 to 1/6 hp., and will also show centrifugal blowers rated from 15 to 320 c.f.m.

There will be a noteworthy array of control specialties. Among self-contained air conditioning controls will be an automatic electric summer-winter changeover and a "Selectaflow" valve, a mechanical heating-cooling control. There will also be examples of time controls. One will be a portable timer for window cooling units, another, a flush-mounted fan timer.

Among new materials to be revealed at Philadelphia will be several forms of insulation. One is a polystyrene foam board, developed for low temperature equipment and various building applications, which is said to be completely self-extinguishing.

Another is a new foamed plastic insulation specially recommended for bent tube and fittings. It has a "built-in" vapor barrier, is made in 6-ft. tubular lengths without longitudinal joints, and can be applied with ease to new or old pipe.

The variety of offerings for residential applications "will constitute almost as impressive a feature of the exposition as will the array of industrial equipment," it was reported.

One exhibitor combines with residential and commercial oil-fired water heaters and oil burners a complete line of water conditioning equipment.

Gas Fired Units

There is an apparent increase in the number of offerings of gas-fired residential heating equipment. In one case a new circulating hot water heater is offered for installation with an oil burner, but adapted for easy conversion to gas "when available and/or less costly."

Another new line of gas-fired heating boilers illustrates the high degree of adaptability to which equipment in this field has been developed. It is fully enclosed, has all piping, controls, burners, and pumps at the front, and is approved for closet installation with zero clearances, and for use on combustible floors.

A noteworthy innovation in the same line is a copper tube boiler which furnishes water at three temperature levels—200° F. for heating, 180° F. for sanitary rinsing, and 140° F. for general purposes.

Many displays will present original solutions for problems that have long been under attack. One represents a frontal assult on the obstinate difficulty caused by sound transmission through air conditioning ducts, it was stated. The solution offered is a labyrinthine baffle designed to suppress noise without impairing the flow of air.

Close attention will be paid to an innovation in radiant heating. This is an infrared overhead panel which is believed to constitute a new approach to industrial and commercial space heating.

NEW!

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NO-MO-RUST

fills seasonal business slump

Anco No-Mo-Rust

Is a new product that is designed to work effectively for your customers and for your fall and winter profits. This proven-effective formula prevents rust and corrosion in chilled and tempered water systems, hot water heating boilers and small steam heating boilers.

Economical to use

One two-pound can of NO-MO-RUST will provide protection for each 250 gallons of chilled water or for each 125 gallons of hot water in the system. Available in 2-lb. and 10-lb. cartons, four cartons to each case. Order a few cases and assure yourself of a profitable year round business.

Specialists in making water behave

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2,430 FROZEN FOOD PACKS

and two-side shopping in Warren's new Twin-Isle!*

Maximum capacity in minimum floor space was the problem presented to Warren by retailers everywhere, and 76 years of experience and research paid off again—with the space-saving, big-capacity Twin-Isle Merchandiser.

The Twin-Isle offers two-side shopping from two compartments—yet one refrigerator—holds 2,430 frozen-food packs or 2,160 pints of ice cream, and is only 58" wide over-all. Offers twice the variety of a conventional low-temperature display case!

Lower total investment in cases themselves, less comparable horsepower per lineal foot, *installation costs cut in half*, and a drastic reduction in cost of operation. Another fine example of product result from Warren's CONTINUOUS RESEARCH Program.

- COLORAMICS® Bands optional at no extra cost.
- Four-shelf merchandising canopies available.

*Patent Pending

this much floor space SAVED!

Warren Refrigerators BOX 1428 • ATLANTA 1, GEORGIA

EXPORT DIVISION: P. O. BOX 2788, LOS ANGELES, CAL.

New... Better

888 hermetic eye*

double port sight glass

with revolutionary hermetically fused glass-to-brass construction . . . no gaskets, joints or fittings

Another great stride in leakproof refrigeration installations comes with the Superior 888 *hermetic eye double port sight glass*. Here is the perfect hermetic bonding of glass-to-brass—no gaskets, joints, solder seals or fittings.

Tested to more than 3000 p.s.i., it assures leakproof operation. Double port design for clear-through vision—the word FULL clearly visible only when system is charged with refrigerant. The special heat-resistant glass possesses high tensile strength. Available in 1/4" and 3/8" male-to-male and male-to-female SAE flare.

*Trademark

Simplicity of Design

• Hermetically fused glass • All-brass body

(Patents Pending)

LOOK FOR THE 888 HERMETIC EYE AT LEADING WHOLESALERS IN THE INDUSTRY

Superior valve and fittings co.

Pittsburgh 26, Pennsylvania

Air Distribution Requirements In Year-Round Air Conditioning

Part 3—Fundamentals of Equipment

By Frank D. Klein, Chief Engineer, Governair Corp.

WHAT IS COMPRESSOR VOLUMETRIC EFFICIENCY?

Few really understand Volumetric Efficiency. The term is bandied about, but its significance is generally lost. The compressor designer starts out with a Theoretical Compression Cycle and thereby conceives a Theoretic Volumetric Efficiency necessary to accomplish it. The experimental compressor is then built and evaluated on the basis of the actual Volumetric Efficiency in the actual compression cycle concerned. The Actual often varies considerably from the Theoretical. The capacities thus obtained for the selected refrigerant, under the observed temperature-pressure conditions, are established.

Remembering in its initial design stages that the practical piston displacement of the compressor must be greater than the volume of suction vapor drawn to the suction stop valve, the actual result, establishing the ratio of this volume of suction vapor to the corresponding piston displacement is then known as the Volumetric Efficiency.

Apart from this characteristic, the power expended on the refrigerant to produce the capacity, overcome pressure losses through the stop valves, losses through the refrigerant passageways (including the eddying currents within the refrigerant gas itself, and the power necessary to overcome weight and inertia and other design loss factors, are factors.

HEAT OF FRICTION AT SELECTED SPEEDS OF ROTATION

The designer and manufacturer of the compressor established both at its origin and by Dynamometer tests, the maximum speed of rotation; they observed during their tests by readings taken from numerous thermocouples established at those points of critical friction, what heat was involved at the speed of rotation concerned.

By design of the lubrication system they compensated for all normal heat of friction at such points, therefore any attempt to exceed the recommended maximum speed of rotation brings on conditions promoted by excessive heats of friction in those critical areas, that will lead to ultimate failure.

There are other effects promoted by the speed of rotation, than heat alone. In theory, in the compression cycle, the brake horsepower, the refrigerating capacity and volumetric efficiency remain constant per cubic foot of compressor displacement, regardless of the speed of rotation. In actuality this does not work out. For instance:

(1) Refrigerant gas leaking back through suction and discharge valves and piston contributes greatly to the above not holding true. This leakage is not proportional to the speed of rotation, on the other hand it is wholly dependent on the mean effective pressure in the cylinder of the compressor at the particular speed of rotation.

At low speeds of rotation the leakage per cubic foot of refrigerant gas handled is high; as a result this effect adds heat and gas volume throughout the suction stroke of the piston, in turn, reducing the volume of suction gas drawn into the compressor.

Thus while the heat of friction is reduced by low speeds of rotation, low speed plus this leak-back effect reduces the gas volume drawn in per r.p.m.

Higher speeds of rotation in the open-type compressor seems to find a break point at approximately 1,300 r.p.m. where this leak-back diminishes more rapidly than the heat of friction increases due to the increased speed of rotation.

EFFECTS OF OTHER HEATS ON TOTAL VOLUMETRIC EFFICIENCY

In addition to the Heat of Friction that must be dissipated is that of Compression. Both must of course be dissipated to a transfer medium that will allow, at the proper rate, the compressor to operate at its Volumetric Efficiency without interference by Heat within the compressor itself.

Cylinder temperatures are derived primarily from the Heat of Friction and secondarily from the Heat of Compression. Other operating members within the compressor also generate a heat of friction that must be transferred. These heats find their way to the compressor walls.

In operation the cylinder walls are alternately in contact with both hot and cold refrigerant gas. In order to obtain the optimum in efficiency for the compressor a "normal" or mean temperature of the cylinder wall must be maintained, that they in turn do not require excessive means of transfer in order to dissipate excessive heats.

The effect of refrigerant gas on the cylinder wall during both compression and discharge stroke looks like this.

1. Heat is absorbed by the refrigerant gas on the first part of the compression stroke.
2. As the compression stroke continues in its cycle-limit to the last half the temperature of the refrigerant gas rises rapidly.
3. When the refrigerant gas temperature rises enough to exceed that of the temperature of the cylinder wall, it dissipates its heat to the surrounding mass of metals.
4. The total effect of this rise in temperature of the refrigerant gas rises still more rapidly as the discharge stroke initiates, reaching even higher temperatures on the last half of the stroke requiring still additional methods of dissipation.
5. As a result of the above, the total requirements for dissipation must be equal to the heat previously given up to the refrigerant gas plus the additional heat obtained from the walls of the cylinder.

Due to the fact that the total time cycle involved in which the above strokes take place are considerably less than that involved in the heating of the gas refrigerant, the temperature differentials must be greater. Thus it can be said that the mean temperature of the cylinder wall must be maintained more closely to that of the Suction Gas Temperature than to that of the Discharge Gas Temperature.

Thus in order to maintain Volumetric Efficiency of the compressor, the rate of heat dissipation and method must be equal to if not greater than that of the total heat generated.

Possibly the head of the compressor may be said to be the ultimate greatest single recipient of operating heats, for both Heats of Friction and Heats of Compression concentrate there.

In addition to the foregoing heats, is that effect contributed by the atmospheric temperatures surrounding the operating compressor. The Heats of Friction and Compression transferred to the compressor body in general, with particular reference to the Head, less that of the heat absorbed by the refrigerant gas in the first part of the suction stroke, must be transferred to some dissipating media through some pre-selected method.

By such media and method the Mean Temperature of the cylinder wall is maintained at a norm conducive to maintaining volumetric efficiency.

(To Be Continued)

For Your Reprint Copy

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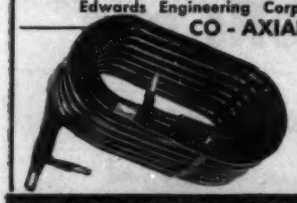
Heat rising from the horizontal condenser creates a chimney-like draft that continues to draw fresh air through the unit. Manufactured in 2, 3, 5, and 7½ ton basic sections, which then can be assembled in multi-sections for unlimited capacities up to hundreds of tons.

This principle eliminates: Noise, Motors, Wiring, Maintenance, Operating Problems. WRITE Airvec Dept., Edwards Engineering Corp. Manufacturers Agents Inquiries Invited.

CO-AXIAL FREON CONDENSERS



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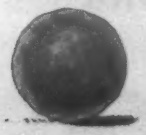
Which Desiccant will Dry Best?

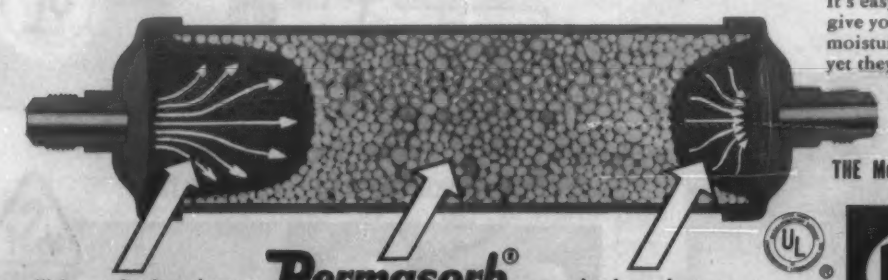
Only a desiccant kept clean by a low-micron INLET FILTER can give prolonged, full-strength drying --and only DFN FILTER-DRIERS have it!

THIS BEAD? -- or THIS BEAD?



This desiccant bead is dirty, pore-clogged, sludge-coated by contaminants in the system.

This desiccant bead is clean, open-pored, water-thirsty, because no contaminants can reach it.



It's easy to see why DFN Filter-Driers give you maximum protection against moisture, clogging and corrosion—yet they cost no more. Wide range of factory-sealed and cartridge types at leading wholesalers everywhere.

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High-capacity, low-micron INLET FILTER
Placed ahead of desiccant to keep foreign matter and sludge from clogging pores and reducing drying action.

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A balanced blend of today's most efficient desiccants, kept clean for maximum, long-life drying and acid prevention.

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Holds all fines and particles within the drier — out of expansion valves and critical parts.

DFN The only REAL FILTER-DRIERS

Refrigeration Problems
And Their Solution
(As Written by Paul Reed)

Placement of Oil Separators (1)

QUESTION

One subject that seems to be not fully understood is where to place the high-side oil separator. Most manuals say to put it as close to the compressor as possible, but I have seen them in all locations, and as far as 25 ft. away from the compressors. I heard of one recently that was installed in the liquid line! What is your suggestion for the proper location?

Another thing; where should the oil return to the compressor be placed? I have seen:

(a) Oil return line connected to the oil equalizer line of two compressors connected in parallel.

(b) Oil return line connected to the gas equalizer line of two compressors connected in parallel.

(c) Oil return line connected into the suction line ahead of the suction service valve. (Several manuals advise against this.)

(d) On one installation of three compressors in parallel, the oil return was connected into a passage in the compressor that leads to the suction manifold.

ANSWER

By all means the high-side oil separator should be just as close to the compressor discharge as possible. This is not merely an arbitrary statement, but is based on very good reasons and is backed by practical field experience.

Petroleum base oils and liquid R-12 mix readily in all proportions; just about the same as oil and gasoline mix. In the receiver, liquid line, and evaporator, the liquid is mostly R-12 with some oil, perhaps 10 to 20%, mixed into it. In the compressor crankcase, it should be and normally is the other way around, a small percentage of R-12 in the oil.

The amount of oil circulated through the system depends upon how much oil gets out of the compressor. Obviously, the less oil there is in the hot gas from the compressor, the better. Anything that we can do to lessen the amount of oil leaving the compressor, will lighten the burden on the oil separator, or even make the use of an oil separator unnecessary.

KEEP RETURN GAS SUPERHEATED BUT EVAPORATOR ACTIVE

The first point of attack is to see that the suction gas is coming back to the compressor superheated at least 20 or 25° F. If it is not, the suction gas is so "wet" that it contains a great deal of oil that goes right on into the cylinders instead of separating from the gas and going into the crankcase.

It is a pretty good rule to keep the suction gas to about 60 or 65° entering the compressor. This is high enough to insure oil return to the crankcase and also to insure that the compressor itself will be warm enough that the oil in the crankcase will be very low in R-12 content.

This 60° to 65° suction gas to the evaporator must not be obtained at the expense of the evaporator. The evaporator must be maintained fully active regardless of all else.

If its design is such, or the suction line is so short, that it is impossible to keep the evaporator fully active and yet hold the suction gas entering the compressor to as high as 60°, then a liquid to suction line heat exchanger should be used.

MAY BE COMPRESSOR'S FAULT

Much depends of course on the compressor itself. The design of some compressors lends itself to "oil pumping." Its oil check valve and oil return arrangement may be poorly designed. It may splash too much oil up on the cylinder walls, which contributes to oil pumping. (Perhaps the oil level in the crankcase is too high.)

Possibly the rings and pistons are worn; but this is a far less frequent cause of "oil pumping" than might be supposed.

OIL SEPARATOR CAN BE ABUSED

This discussion may seem to be wandering from the question of where to put the high-side oil separator, but it has a direct bearing on the whole subject. No part of the system is completely independent; they are all inter-related, and one affects the other.

The point is that the function of a high-side oil separator is to remove as much oil as possible from the gaseous refrigerant leaving the compressor, and before it enters the condenser.

High-side oil separators are not cure-alls. They must not be imposed upon nor overloaded, as they can very well be if some of the other parts of the system are not functioning properly.

If the oil separator is not removing the oil as you think it should, possibly you are expecting too much from it; perhaps in some other part of the system you are making it almost impossible for the oil separator to do what you expect of it.

PROPORTIONS OF MIXTURE DEPEND ON PRESSURE AND TEMPERATURE

Even if the amount of oil in the refrigerant leaving the compressor is kept to the minimum as outlined above, there are still two factors that affect the separation or absorption of oil and refrigerant—temperature and pressure.

These factors were covered in considerable detail in the series entitled "The Oil Cycle in Chapter 75 in Volume J-5 of the "Refrigeration Problems" Manual.

Briefly reviewed, the colder the mixture of oil and refrigerant is, and the higher its pressure, the more oil the mixture can contain. The hotter the mixture is, and the lower the pressure, the less oil it can contain.

In a high-side oil separator, the pressure must be high, for it is on the high side of the system; but we can be sure that the gas is hot by keeping the separator near the hot-gas discharge of the compressor.

(To Be Continued)

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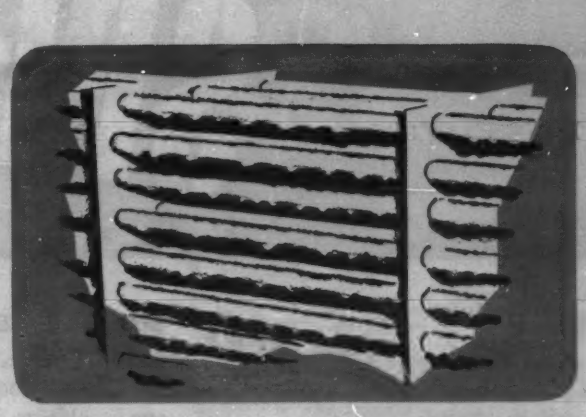

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Light container is much easier to handle than heavy gallon jugs. Prevents breakage, splash and drip. Tough plastic liner and spout make pouring easy. To close, just fold spout, attach clip, and it's safely resealed, ready to store.

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A new moneymaker for service companies is the "Virginia" Water Treatment Plan. For details, get *free* folder, "How to Turn Water into Money." Write Refrigeration Division, VIRGINIA SMELTING CO., 189 Jefferson St., W. Norfolk, Va.

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ISSUED: January 26, 1959

LAST FORMS CLOSE: January 14, 1959

Special Issue for the INTERNATIONAL HEATING and AIR CONDITIONING EXPOSITION, January 26, 1959

AIR CONDITIONING & REFRIGERATION **NEWS**

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- **DETROIT**, 450 W. FORT ST., WOODWARD 2-0924, AL SCHILDHAMMER.

ASHAE, ASRE Merger Vote Procedures--

(Concluded from Page 1, Col. 2)

"We have heard of some members who allegedly feel that the proposal to merge is but the product of willful thinking by a small group who would impose a decision upon their fellow associates in the field of refrigeration and air conditioning. That simply is not so.

"The fact is that the idea of possible merger has been talked about for perhaps as much as 30 years. A Committee of Cooperation between ASRE and ASHAE has existed for four years. Your council initiated the present movement by a unanimous vote. Each and every step has been with the full backing of council.

"By special letter ballot the 30 members of your council voted 25 for the merger, 3 against the merger, and 2 abstained from voting; therefore, the council very definitely supports the merger.

"Personally, I have no feelings except for the preservation of the hard-won standing of ASRE and for the welfare of the interests represented by its members and its programs. However, it is my earnest conviction that the march of time, the inevitable shifts of technology, the present and undoubtedly to-be-continued emphasis upon newer factors within what was once a predominantly refrigeration situation, lead to the conclusion that what is best for ASRE is a merger which will permit broader and coordinated development in two closely allied fields where the common problems are the transfer of heat and the circulation of air.

"Today, it really is not a question of whether ASRE and ASHAE should merge but of when; for most assuredly, if we do not do it this year, we shall inevitably have to face the recurrence of the question for later decision.

"I favor the merger. You may or may not, but regardless of how you feel, be sure to vote as we want to make sure that whatever decision is reached is done so by our full membership."

California RSES Workshop Topics Listed

LOS ANGELES—Subjects on the program for the Refrigeration Service Engineers Society workshop to be held at California State Polytechnic college in San Luis Obispo Jan. 23-24 have been announced by Hal Jarvis, educational chairman.

They include: Use of modern testing equipment in servicing and checking out the hermetic unit; heat pumps and their control; air conditioning controls and electrical wiring; diagnosing the sick system; proper use of the vacuum pump.

Also, pumps: centrifugal and low head pressure; good piping practice; proper use of dessicants and driers; selling yourself to your customer; public relations; moisture menace.

Thermoelectric Effect To Be ASRE Meeting Topic--

(Concluded from Page 1, Col. 3)

sion, Dec. 1, Authors Lackey, Somers, and Meess of Westinghouse Electric Corp. will present "Application of Thermoelectric Cooling and Heating to Novel Household Appliances," followed by "Design and Performance of a Thermoelectric Refrigerator" by J. B. Heinicke of Whirlpool Corp.

W. R. Danielson of Whirlpool will review similarly a "Temperature Control Chamber Using Thermoelectric Cooling." Among displays at the 1959 ASRE Research Exhibit will be two thermoelectric Whirlpool developments.

Other technical sessions will be devoted to heat transfer, compressor design, and general topics.

There will also be a domestic refrigerator engineering conference, a commercial refrigeration conference, and an air conditioning conference.

In addition, six engineering forums are on the technical program, details of which follow.

MONDAY, DEC. 1

9:30 a.m.—First Technical Session
HEAT TRANSFER (1)

"Effect of Fin Bond on Heat Transfer"—D. M. Dart, Refrigerants Div., Marley Co.

"Energy Flow in a Refrigerated Space Complex with Transient Refrigeration Loads"—C. F. Kayan, professor, Mechanical Engineering Dept., Columbia university.

"Predicting Leaving Dry-Bulb Temperatures for Air Conditioning Coils"—A. S. Decker, vice president, engineering, and S. J. Gianni, head, research and development, Dunham-Bush, Inc.

9:30 a.m.—Domestic Refrigerator Engineering Conference
NON-CELLULOSIC INSULATION FOR HERMETIC MOTORS

"Hermetic Motors Insulated with 'Mylar' Polyester Film"—J. P. Harrington and R. J. Ward, Chestnut Run Laboratories, Film Dept., E. I. du Pont de Nemours & Co.

"Epoxy Insulation for Hermetic Motors"—Joseph R. Weschler, Permacel.

"'Lecton' Acrylic Resin Insulation"—O. J. Spawn, Supervisor, Finishes Div., E. I. du Pont de Nemours & Co.

"Non-Cellulose Insulation for Hermetic Motors"—A. P. White, product development manager, Spencer Thermostat Div., Metals & Controls Corp.

"Selection and Performance of a New Insulation System for Hermetic Refrigerator Motors"—J. P. Hurtgen, Hermetic Motor Dept., and A. R. Mounce, Small Integral Motor Dept., General Electric Co.

2:30 p.m.—Second Technical Session
THERMOELECTRIC EFFECT

"Application of Thermoelectric Cooling and Heating To Novel Household Appliances"—R. S. Lackey, fellow engineer, and J. D. Meess, senior development engineer, New Products Dept., Westinghouse Electric Corp., E. V. Somers, manager, Heat Transfer Section, Westinghouse Laboratories.

"Design and Performance of a Thermoelectric Refrigerator"—J. B. Heinicke, Research Laboratories, Whirlpool Corp.

"Temperature Control Chamber Using Thermoelectric Cooling"—W. R. Danielson, Research Laboratories, Whirlpool Corp.

2:30 p.m.—Commercial Refrigeration Conference

"Frost Factor in Low Temperature Case Design"—B. L. Hermann, chief refrigeration engineer, Refrigerated Cabinet Div., Anheuser-Busch, Inc.

"Frost Performance Evaluation of Fin and Tube Evaporator in a Gravity Type Ice Cream Cabinet"—P. P. Omelianchuk, assistant chief engineer, Schaefer, Inc.

"Defrosting Controls and Methods in Commercial Refrigerators"—J. H. Rainwater, chief engineer, Warren Co.

"Air Flow in Open Cases"—D. A. Voorhies, C. V. Hill & Co., Inc.

TUESDAY, DEC. 2

9 a.m.—Third Technical Session
HEAT TRANSFER (2)

"Characteristics of Wire and Tube Condensers"—E. V. Somers, J. A. Cyphers, and R. D. Cess, Westinghouse Research Laboratories.

10 a.m.—"An Evaluation of Convection Heat Transfer from Wire and Tube Condensers"—Dr. O. W. Witzell and W. E. Fontaine, professor, School of Mechanical Engineering, Purdue university, and W. J. Papanek, Lockheed Missiles Systems.

11 a.m.—"Heat Transfer Rates from Heated Horizontal Tubes to Boiling Refrigerant-22"—Dr. Meri Baker, executive director, Kentucky Research Foundation, and C. F. Staley.

9 a.m.—Fourth Technical Session
GENERAL

"Gas Analysis—A New Tool for Determining the Chemical Stability of Hermetic Systems"—Dr. H. O. Spauschus and R. S. Olsen, research chemists, General Electric Co.

9:45 a.m.—"Sound Attenuation in Straight Ventilation Ducting"—J. B. Chaddock, professor, Mechanical Engineering Dept., Rensselaer Polytechnic Institute; Lt. T. L. Moore, U. S. Navy; Lt. H. H. Bell, U. S. Coast Guard; and Lt. J. K. Nunnely, U. S. Navy.

10:30 a.m.—"Nomograph Design and Selection of Counterflow Towers"—G. W. Brooke, Jr., systems analyst, Detroit Controls Div., American-Standard.

11:15 a.m.—"Viscosity and Solubility Characteristics of Mixtures of Refrigerant 13B1 and Lubricating Oils"—L. F. Albright, professor, School of Chemical and Metallurgical Engineering, Purdue university, and J. D. Lawyer, University of Oklahoma.

2:30 p.m.—Engineering Forums

Subjects—"Evaluation Methods and Standards for Hermetic Motor Insulating Materials"; "Vacuum Cooling of Meats"; "New Power Voltage for Large Air Conditioning Tonnage"; "Hermetic Motor Protection"; "Frozen Food Display Case Problems"; "Problems with Design and Installation of Low Temperature Systems."

WEDNESDAY, DEC. 3

9 a.m.—Fifth Technical Session
COMPRESSOR DESIGN

"Design Search for the Foolproof Air Conditioner"—P. W. Wyckoff, chief engineer and director of product, Airtemp Div., Chrysler Corp.

10 a.m.—"Reciprocating Compressor Force Calculations on a Card Program Computer"—H. P. Soumeral, chief engineer, Compressor Development, Worthington Corp.; Dr. T. Kusuda, Air Conditioning & Refrigeration Div., Worthington Corp.; and J. H. Dittfach, University of Massachusetts.

11 a.m.—"Instrumentation and Methods of Evaluating Proposed New Hermetic Motor Insulating Materials"—John F. Harris and C. B. Sonnino, research physicists, Emerson Electric Mfg. Co.

9 a.m.—Air Conditioning Conference
NEW HEAT PUMP DEVELOPMENTS

Speakers—E. R. Ambrose, American Electric Power Service Corp.; Walter Yeary, application engineering, General Electric Co.; S. F. Gilman, Research Div., Carrier Corp.; E. J. Welman, Center for Research in Refrigeration and Climate Control, Purdue university; F. J. Reed, chief engineer, ARI.

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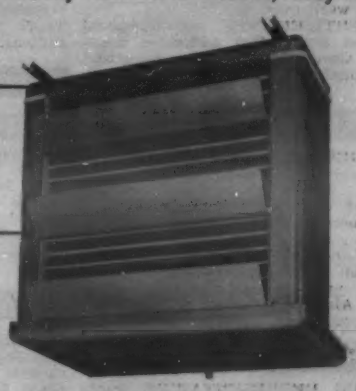

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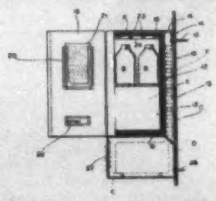
PATENTS

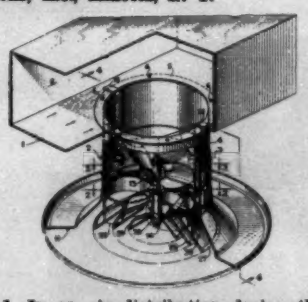
Week of August 26

2,848,890. DAIRY BOX. Walter H. Riedel and William C. Riedel, St. Paul, Minn.; Marie A. Riedel and First Trust Co. of St. Paul, executors of said Walter H. Riedel, deceased.



3. A depository for perishables comprising a storage compartment having insulated end, side and back walls, an insulated closure member swingably attached to the front of said storage compartment, means affixed to said closure member to maintain said closure member in a locked position, adjustable shelving attached to the back and side walls within said storage compartment. . . .

2,848,935. AIR DISTRIBUTING DEVICES. Charles Demuth, Mineola, N. Y., assignor to Charles Demuth & Sons, Inc., Mineola, N. Y.



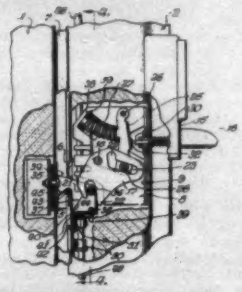
1. In an air distribution device, the combination of a take-off pipe for use as an outlet from an air duct, a sleeve axially disposed within said pipe, means supporting said sleeve in said take-off pipe, an outwardly and downwardly flaring hood secured to the lower end of said pipe, a diffuser unit provided with an axially disposed stem the upper end of which is slidably disposed within and supported by said sleeve. . . .

2,848,936. DIFFUSER. Vincent P. Vallero, Denver, Colo.

1. A diffuser of the class described comprising a tubular conduit arranged to provide a passage through a building partition, a flared outlet secured to said tubular conduit and providing an outlet on one side of said partition, a rigid spider mounted in said tubular

conduit, a double lead right hand stud mounted on said spider and extending substantially centerwise of said tubular conduit. . . .

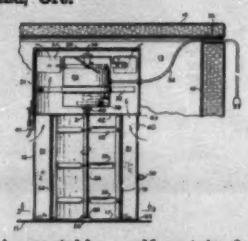
2,849,250. EMERGENCY RELEASE LATCH MECHANISM. Cecil M. Williamson, Lombard, Ill., assignor to General Electric Co.



1. An emergency latch release mechanism operable from within an enclosure having a hinged door, comprising a keeper having a fixed frame portion secured externally of said enclosure adjacent a margin of the door opening, a keeper member within said frame portion, latching means carried by said door and including a latch bolt disposed within said door. . . .

Week of Sept. 2

2,849,862. ICE CREAM FREEZER FOR USE IN A REFRIGERATED COMPARTMENT. Frank A. Anderson, Portland, Ore.

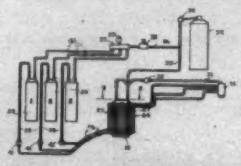


1. A portable, self-contained ice cream freezer for two-stage operation in a refrigerated compartment comprising a motor unit and a cylindrical cream container, means for detachably mounting said motor unit on top of said container, a mixer in said container driven by said motor unit, a fan in said motor unit. . . .

2,849,863. ICE CUBE EJECTOR MECHANISMS. Ernest A. Bailiff, and Donald R. Cobb, Evansville, Ind., assignors to Whirlpool Corp.

An ice cube tray of the ejecting type adapted to be actuated by a lever extending forwardly out of an evaporator, comprising a metal tray having a bottom, side walls, and end walls. . . .

2,850,213. MULTIPLE CARBONATED DRINK DISPENSING APPARATUS. Albert Cole, Miami Beach, Fla.

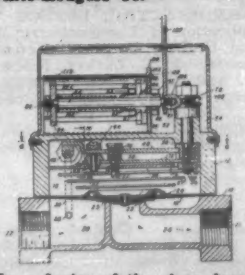


A multiple drink vending apparatus comprising a carbonator, a coil intimately embracing the carbonator and comprising a plurality of vertically aligned ducts abutting throughout their longitudinal lengths with the end of one of said ducts communicating with the carbonator. . . .

2,850,242. AUTOMATICALLY CONTROLLED AIR-MIXING CABINET. Alwin B. Newton, assignor to The Coleman Co., Inc., Wichita, Kan.

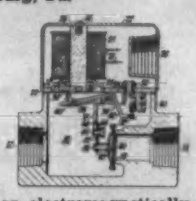
1. In combination with a cabinet adapted for the mixing of room air at one temperature with conditioned air at another temperature and then discharging the mixed air into the room at an intermediate temperature, said cabinet providing a room air inlet, a mixed air outlet, and a conditioned air inlet adjacent said room air inlet. . . .

2,850,257. GAS VALVE. Carl A. Smith and Howard B. Kinsella, Jr., Afton, Mo., assignors, by mesne assignments, to White-Rodgers Co.



3. In a device of the class described, a support member, a member movably mounted on said support member, a thermally expansible wire conductor connecting said members, spring means acting on said movably mounted member in a direction to tension said conductor. . . .

2,850,268. ELECTROMAGNETICALLY OPERATED VALVE. Branko Lazich, Pittsburgh, Pa., assignor to Robertshaw-Fulton Controls Co., Greensburg, Pa.



1. In an electromagnetically operated fluid valve, the combination comprising a casing having an inlet and an outlet for fluid therein intersected by a valve seat, a chamber in said casing in communication with said inlet and said outlet. . . .

(To Be Continued)

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

'59 Hotpoint Refrigerator-Freezers Designed To Prolong Food Life, Hold More Half-Gal. Containers, Big Bottles

CHICAGO — Hotpoint's 1959 line of refrigerators boasts "prolonging refrigerated food life up to 100% and increasing storage space in the tall bottle zone 50%," the company announced.

The 1959 ten-model line includes two 8-cu. ft., three 11-cu. ft., four 12-cu. ft., and one 16-cu. ft. refrigerators. Five are combination refrigerator-freezers.

To prolong refrigerated food life, Hotpoint has lowered the fresh food compartment temperature about 4°, from 41 to 37°, it was stated. The company calls this feature "Reserve Coldpower."

Increased demand and popularization of the "king sized" beverage bottles plus increased use of half-gallon containers suggested to Hotpoint designers the so-called tall bottle area be increased to accommodate larger bottles, it was noted. By redesigning the butter bin and cheese keeper, Hotpoint increased this tall bottle area.

Another feature on all 1959 refrigerators is off-set hinges which permit user to build the refrigerator into a wall "without expensive remodeling costs."

Largest of the deluxe combination refrigerator-freezers for 1959 is the 9EN16, a 16-cu. ft. two-door model with a 6-cu. ft. zero freezer on the bottom and a full 10-cu. ft. automatic defrosting fresh food compartment on top.

Freezer compartment features include sliding baskets, 15-can juice dispenser, frozen food package rack, and three ice trays, plus a foot pedal which opens the door. Refrigerator features include waist-high porcelain crispers, sliding aluminum shelves, bottle bin holding eight ½ gals. of milk, butter bin, and cheese keeper.

Model 9EY12 is a 12.3-cu. ft. roll out combination featuring a separate 101-lb. food freezer, special dairy storage area, gliding and adjustable aluminum shelves, porcelain crispers, and automatic defrosting.

Another 12-cu. ft. combination is model 9EN12 featuring a 115-lb. freezer on the bottom, rollers, waist-high crispers, and special divided lower shelf. Model 9ET12 is a two-door combination with a separate 101-lb. food freezer on top, butter bin and removable egg tray, and full width vegetable crisper.

Other models for 1959 include 9EG11, a 10.9-cu. ft. combination with a 75-lb. separate food freezer; 9EB12 and 9EBS12 with a 49-lb. freezer capacity and a special chiller tray which has a 17-lb. storage capacity; an 11.6-cu. ft. combination model featuring a 49-lb. food freezer; and two 8-cu. ft. refrigerators, models 9EB8 and 9EA8; each has 32-lb. freezer with chiller tray holding 12 lbs. of storage.

All combination models feature automatic defrosting, plus new Reserve Coldpower.

Hotpoint also announced that in 1959 it will offer chest type food freezers ranging from 13 to 26-cu. ft. capacity, and uprights from 12 to 18 cu. ft.

PROLONGING refrigerated food life up to 100% and increasing storage space in the tall bottle zone are two of the features claimed for Hotpoint's 1959 line of deluxe refrigerator-freezers. Hotpoint has lowered fresh food compartment temperature about 4° to extend food life. Popularity of half-gallon containers and king size bottles prompted Hotpoint to redesign the tall bottle space permitting a 50% increase. Two-door model (above) features 101-lb. food freezer.

Largest of the chest types is a 26-cu. ft., 907-lb. capacity model with two lids. Model 9FK26 features two compartments, four wire baskets, three separators, double lock provision, two interior lights, and a new "Silver Lining" of all aluminum.

Three single-lid freezers complete the chest type line. They include a 20-cu. ft., 638-lb. capacity model 9FK20, a 17-cu. ft. model 9FK17 with a 595-lb. capacity, and a new model 9FJ13, a 12.5-cu. ft. freezer holding 438 lbs. of frozen foods.

Upright freezers, style matched to the 1959 line of Hotpoint refrigerators, are offered in 12, 16, and 18-cu. ft. capacities.

Largest upright is model 9FM18, an 18-cu. ft. freezer holding 630 lbs. of frozen foods. It features three sliding aluminum shelves, glide out storage basket, interior light, and lock.

Medium capacity model 9FL16 is a 16-cu. ft. freezer holding 543 lbs. of frozen foods, and smallest upright freezer is model 9FM12, a 12-cu. ft. freezer holding 417 lbs.

Admiral 9-Month Profit Up 42% over '57 Period

CHICAGO—Admiral Corp. reported its first nine months profit after taxes was over 42% higher than for the same period in 1957.

After tax earnings were $947,254 or 40 cents a share on the 2,367,376 shares outstanding, compared with $665,264 or 28 cents a share during the same period last year. Consolidated net sales for the period totaled $123,529,953 compared with $129,044,499 last year.

Wm. E. Crawford Dies

MILWAUKEE — William E. Crawford, 60, retired director of research and engineering for A. O. Smith Co., died recently at Memorial hospital, Berlin.

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EXPERIENCED METAL design, layout, fabrication and refrigeration. Supervisory capacity. State salary expected, resume experience and education. All inquiries strictly confidential. WEBBER ENGINEERING CORPORATION, P. O. Box 217, Indianapolis 6, Indiana.

EQUIPMENT WANTED

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BUSINESS OPPORTUNITIES

COMMERCIAL REFRIGERATION and air conditioning sales and service business for sale in town of 20,000 population. 16 miles from Lake Erie in Ohio. Good year around business. 30 x 90 building, low rent and overhead. Would consider partner interested in service work. Must have at least 4 or 5 years' commercial refrigeration service experience. BOX A6140, Air Conditioning & Refrigeration News.

Servicing Automobile Air Conditioners

(Vol. 3)

BY C. DALE MERICLE

PONTIAC

Pontiac Motor Div.
General Motors Corp.
Pontiac 11, Mich.

"Circulaire" air conditioner (Fig. 1) introduced by Pontiac in 1958 represents several changes over earlier models. Most significant change involving service is the use of a hot gas by-pass valve to regulate temperature instead of the thermostatically controlled cycling of a magnetic clutch employed in earlier models. The magnetic clutch is used on 1958 Pontiac systems, but its function is simply to turn the unit on or off, not to control temperature.

(The "Cool-Pack" under-dash system was also available for installation on 1958 Pontiacs. The Pontiac Cool-Pack system is identical in all important respects with the 1958 Chevrolet Cool-Pack unit, so the same service instructions will apply to both. Readers are referred, therefore, to the chapter on Chevrolet for data on the 1958 Cool-Pack system used by Pontiac.)

Another important change in the 1958 Circulaire system is the use of vacuum diaphragms to actuate air dampers controlling selection of outside air or recirculated air.

There are also some changes in wiring of the 1958 system.

Refrigerant-12 is employed in the 1958 system. Charge is 4 lbs.

Compressor

Frigidaire's larger compressor is used on 1958 Pontiac systems.

Hot gas by-pass valve is located at the compressor.

Condenser

Condenser is mounted in front of the radiator.

A combination dehydrator-receiver-sight glass is mounted beside the condenser. In previous models the sight glass was in the liquid line near the evaporator.

Evaporator

Evaporator assembly is mounted under the hood in combination with the heater. Air is delivered to the car interior through three outlets on the dash and through openings beneath the dash.

Controls

Air conditioner control panel (Fig. 2) of the 1958 Pontiac system is located to the left of the steering column on the lower section of the instrument panel.

Panel consists of three pushbuttons to control air flow and two vertically sliding levers to regulate blower speed and temperature, respectively. The pushbuttons direct vacuum to diaphragms which by mechanical linkage position air valves or dampers.

With the "off" pushbutton depressed there is no air flow and no cooling.

When the "outside" pushbutton is pushed in, the blower is on and 100% outside air is admitted to the car through the air outlets.

Pressing the "inside" button provides 85% recirculated air and 15% outside air. Blower is on.

Blower speed is regulated by the vertically moving blower control lever. Three speeds are provided. The speed at which the blower is operating is indicated by letters appearing in the control panel. High blower speed is obtained with control in full down position.

Moving the temperature control lever slightly downward from its full up position closes the magnetic clutch switch and starts the compressor operating. A cable runs from this lever to the hot gas by-pass valve to permit regulation of temperature. Maximum cooling is obtained with the temperature control lever in full down position.

As this lever is moved down, an increasing area of blue-green color appears in a dial opening directly above.

The hot gas by-pass valve, when opened, admits hot discharge gas from the compressor into the suction line at the evaporator outlet, thus increasing the pressure and temperature of the evaporator.

In maximum cooling position the by-pass valve normally keeps the suction pressure from dropping below 29.5 p.s.i.g. to prevent icing of the evaporator.

Wiring diagram is shown in Fig. 3.

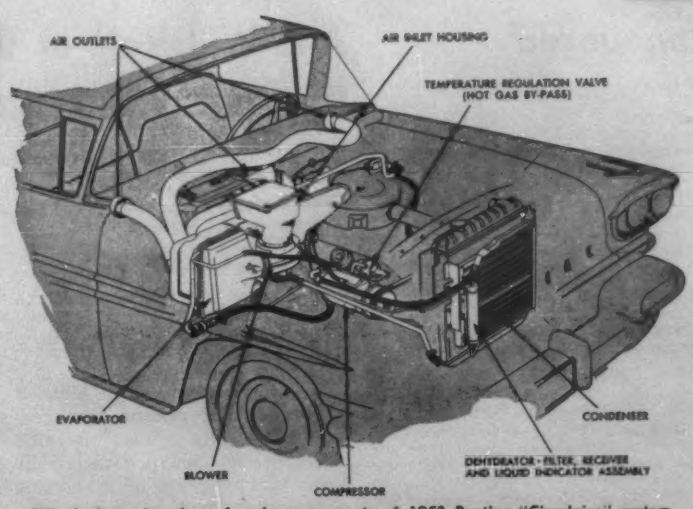

FIG. 1 shows location of main components of 1958 Pontiac "Circulaire" system.

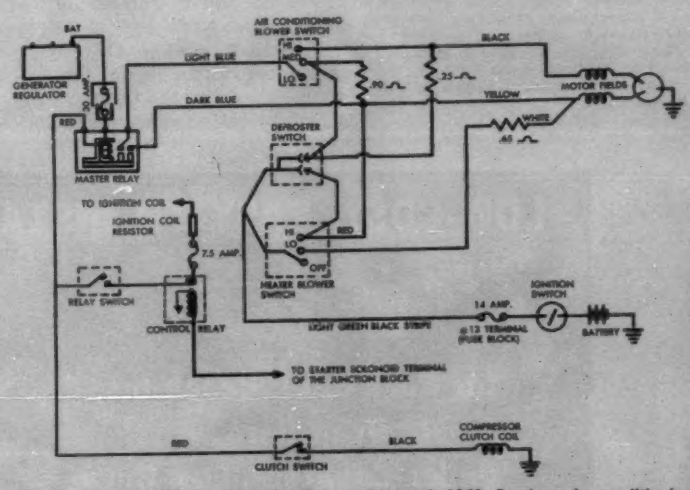

FIG. 3—This simplified schematic shows wiring of 1958 Pontiac air conditioning system.

SERVICE HINTS

Operating Test

Correct operating temperatures of the 1958 Pontiac system for varying ambient temperatures and relative humidity are shown in the accompanying table.

Test procedure is as follows:

Car is in shaded area.

A large (20 in. or more) fan is operating about 2 ft. in front of condenser.

Car windows and doors are closed.

Low pressure side of gauge set is connected to evaporator top tank fitting, and high pressure gauge is connected to compressor discharge valve gauge fitting.

Tachometer is connected to engine.

A humidity indicator is placed on cowl outside air intake.

A thermometer is located 1 in. inside left air outlet nozzle.

Hood is closed as far as possible and joint is taped to prevent heat from engine compartment entering cowl intake.

"Outside" pushbutton is depressed, blower control is set on high speed, and temperature control lever is set in maximum cooling (full down) position.

If evaporator top tank pressure is not 29 p.s.i.g. when engine is running at 2,900 r.p.m., adjust hot gas by-pass valve. Turning adjusting screw of valve clockwise increases pressure; turning adjusting screw counter-clockwise lowers pressure. A one-fourth turn changes top evaporator tank pressure about 3 p.s.i.g.

Adjust engine speed until evaporator top tank pressure stabilizes at 34 p.s.i.g. for 5 minutes with constant engine speed.

If observed temperatures and engine speeds are in accordance with data in the table, the system is operating properly; otherwise, adjustments or repairs will be necessary.

* * *

Operating Temperatures of 1958 Pontiac System

Ambient Temp. (°F.)		Ambient Relative Humidity 20%	30%	40%	50%	60%	70%	80%	90%
70	L. Nozzle °F.	45.5	46	46	46.5	46.5	47	48	49
	Engine r.p.m.	550	570	580	600	610	630	660	700
80	L. Nozzle °F.	47	47.5	47.5	48.5	49	50	53	54.5
	Engine r.p.m.	880	920	1000	1060	1180	1330	1550	1850
90	L. Nozzle °F.	48.5	49.5	50	52	54	56	....	....
	Engine r.p.m.	1320	1410	1560	1780	2075	2550	....	....
100	L. Nozzle °F.	52	54	56	....	....	....	....	....
	Engine r.p.m.	1920	2400	2900	....	....	....	....	....

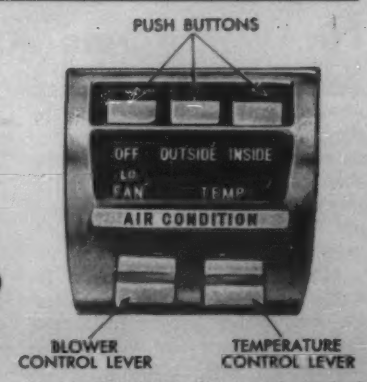

FIG. 2—Air conditioning control panel of 1958 Pontiac.

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NHAW Program Announced--

(Concluded from Page 1, Col. 5)

given at a luncheon meeting by Raymond Moley, nationally syndicated newspaper columnist and contributing editor, *Newsweek* magazine. He will speak on "The Road Ahead for Business and Government."

Monday afternoon will be devoted to the workshop session on wholesaler policy problems. Six wholesalers and two manufacturers will compose this panel.

A general membership meeting is scheduled for Tuesday morning. Then, from 11:30 a.m. to 4:30 p.m., the fourth annual business conference program will be staged.

"This program," it was pointed out, "is designed to give wholesalers the opportunity to confer with top executives of their manufacturing suppliers, and to promote closer cooperation and understanding of mutual needs and problems."

As of a recent date, more than 50 manufacturers had reserved conference booth space, the association reported.

Other convention features include the annual banquet Tuesday evening, the workshop session on cost of services Wednesday morning, with seven wholesalers participating as panel members, and a luncheon Wednesday noon. David C. Phillips, authority on oral communication in business, will be the luncheon speaker.

Preliminary program for the convention was announced as follows:

MONDAY, DEC. 1

8 a.m.—Registration (Grand Ballroom Mezzanine)

9 a.m.—Committee Meetings (All on Second Deck)

Noon — Luncheon meeting (Euclid Ballroom). Raymond Moley, syndicated newspaper columnist, will keynote the convention.

2:15 p.m.—Panel workshop session (Ohio Room) on policy problems of the wholesalers, with discussion covering such subjects as:

Should wholesalers take on major lines of equipment handled by a competitor who is covering the same territory?

Should a wholesaler be a manufacturer's exclusive distributor in certain territories?

If a wholesaler has a major line for a given area on an exclusive basis, should he handled additional lines in competition with his exclusive line?

If a wholesaler should receive the benefit of a price advantage, should he use this as a lever to obtain more business, or maintain his prices and increase his profits?

Pricing and bidding are two separate operations. Can a wholesaler bid and have an open price policy?

Is it proper for a wholesaler to have a pricing policy which varies from customer to customer?

What obligation do wholesalers have to manufacturers who have a policy recognizing the wholesale function, and what should be done to assist such manufacturers?

Should wholesalers have a clearly defined and published policy?

Should dealers have exclusive territories?

Policing the channels of distribution.

5 p.m.—Adjournment.

TUESDAY, DEC. 2

8 a.m.—General membership breakfast (Euclid Ballroom).

9:15 a.m.—General membership meeting (Euclid Ballroom).

Report of officers, report of executive director, report of committee chairmen, report of nominating committee, election of trustees and officers, discussion of problems of general interest to the membership and industry.

11:30 a.m.—Business Conference Program (Grand Ballroom).

1:30 p.m.—Luncheon in the conference booth area (South Foyer).

4:30 p.m.—Conference area closed.

6:30 p.m.—Social hour and reception by associate members (Euclid Ballroom).

7:30 p.m.—Annual banquet, entertainment, dancing (Grand Ballroom).

WEDNESDAY, DEC. 3

8 a.m.—Insurance trust breakfast and annual meeting (Parlor C).

9:30 a.m.—Workshop panel session on "Cost of Services In the Heating and Air Conditioning Wholesale Industry" (Ohio Room).

Pricing service; return merchandise; cost of selling in broken cartons; minimum orders; collect calls and yellow page advertising; trucking; insurance and inventory costs.

Noon—Luncheon (Euclid Ballroom). David C. Phillips, speaker.

2:30 p.m. — New trustees meeting (Parlor C).

5 p.m.—Adjournment.

ASRE Will Vote at December Meeting On Proposed Revisions of 2 Standards

NEW YORK CITY—Proposed revisions of two ASRE standards are being considered by the American Society of Refrigerating Engineers. Voting members of the society will consider adoption of the revisions at the general sessions of the 45th semiannual meeting of ASRE on Dec. 1.

ASRE Standard 14, "Method of Testing for Rating Mechanical Condensing Units," became effective in 1941. Since that time, the program of standards development in the industry has increased and a number of industry standards are in effect.

Principal revisions concern the brine tank calorimeter primary test method, and the standard rating material included in the present edition, according to ASRE.

"It is intended that all standards of ASRE will be primarily concerned with methods of testing equipment," states A. T. Boggs III, technical secretary.

"The rating of refrigeration equipment is believed to be within the scope of appropriate trade associations and will appear in their standards. If a standard already developed or being developed by ASRE does not have a comparable rating standard developed by a trade association, it will include a rating section.

"Revision of Standard 14 is an attempt to initiate this program and conditions for standard ratings will be found as a new section in the appendix. When a trade association becomes available, this appendix will be deleted from the standard."

ASRE Standard 23, "Method of Testing for Rating Refrigerant Compressors," also makes provisions for deletion of the appendix covering conditions for standard ratings when a trade association standard is developed. Principle changes proposed are similar to those for Standard 14. Sections on brine tank calorimeter primary test method, and standard ratings have been deleted.

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